

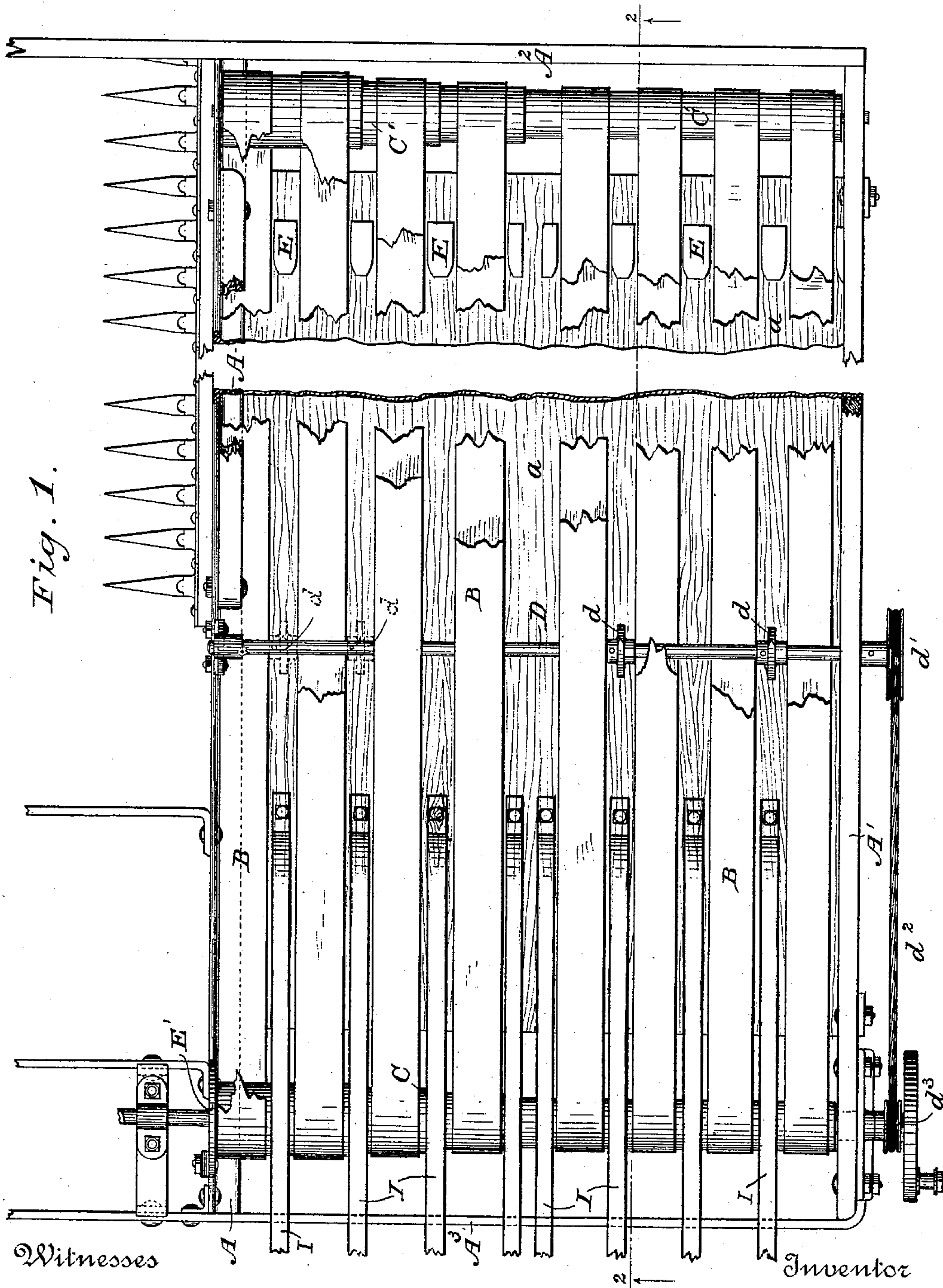
(No Model.)

3 Sheets—Sheet 1.

J. S. DAVIS.
GRAIN CONVEYER FOR HARVESTERS.

No. 407,724.

Patented July 23, 1889.



H. E. Summer
Eda D. Summer

By his Attorney

Wm. A. Skinkle

(No Model.)

3 Sheets—Sheet 2.

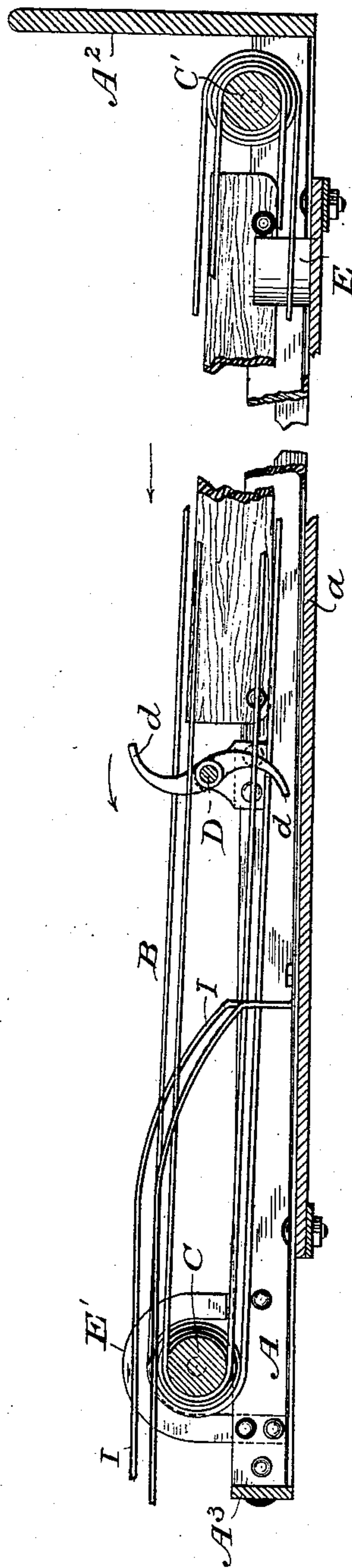
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Fig. 2.



Witnesses

Frank Meif.
b. a. Skinkle.

Inventor

John S. Davis

By his Attorney

Wm A. Sinkler

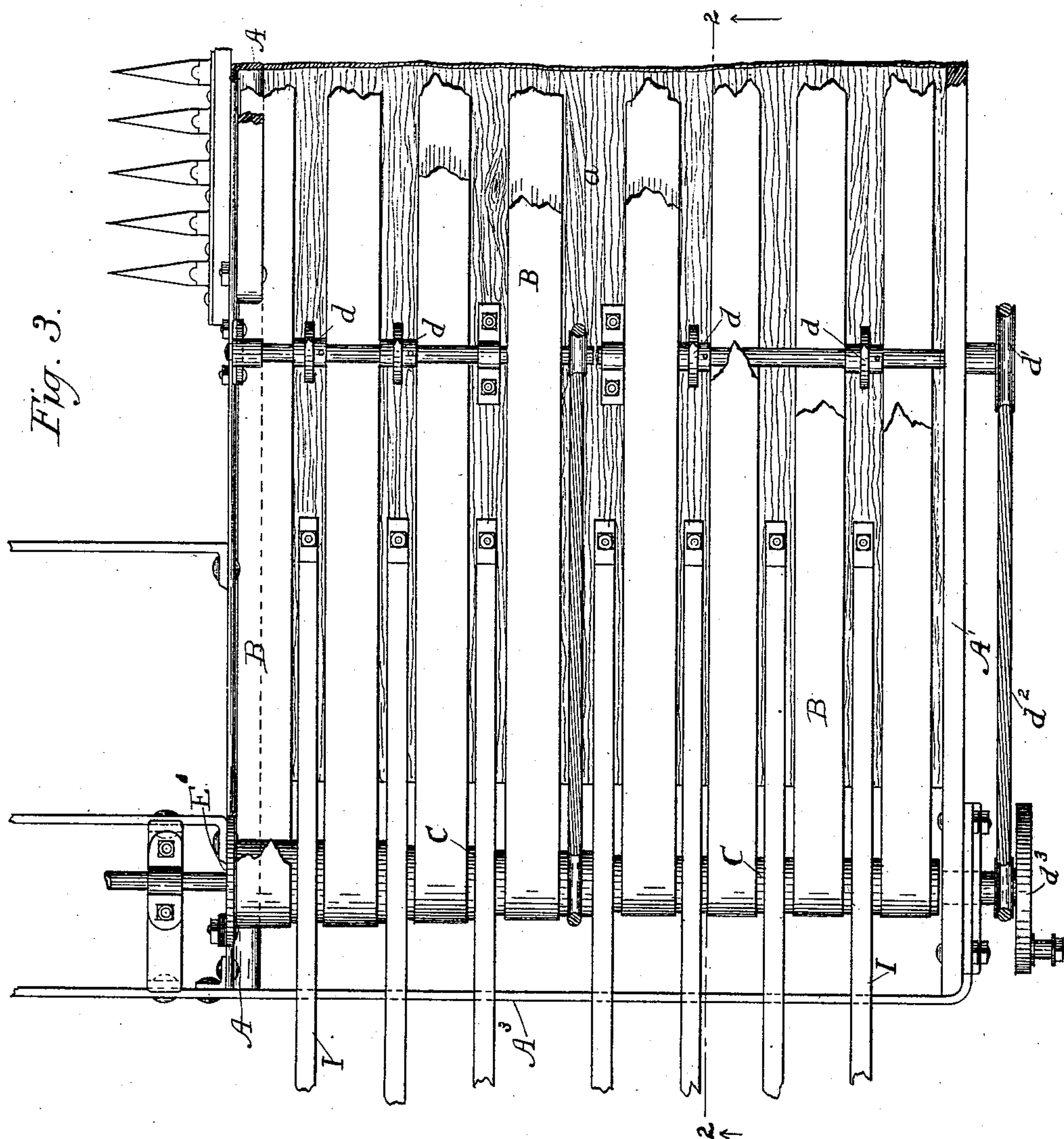
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J. S. DAVIS.
GRAIN CONVEYER FOR HARVESTERS.

No. 407,724.

Patented July 23, 1889.



Witnesses

Chas. E. Gorton
C. A. Skinkle

Inventor

John S. Davis

By his Attorney

Wm. A. Skinkle

UNITED STATES PATENT OFFICE.

JOHN S. DAVIS, OF CLEVELAND, OHIO.

GRAIN-CONVEYER FOR HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 407,724, dated July 23, 1889.

Application filed October 19, 1887. Serial No. 252,794. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. DAVIS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Grain-Conveyers for Harvesters, of which the following is a description.

My invention relates to the carrier mechanism of grain-binding harvesters by which the cut grain is removed from the platform to the binding mechanism, and its main object is to straighten or "even up" the straws as they are being removed from the platform.

It consists of a platform-carrier composed of a series of narrow aprons or belts mounted upon a roller or series of rollers by which they are driven with a straightening device composed of a series of arms mounted upon a shaft hung in suitable bearings in the platform and revolving at a different rate of speed from the carrier-belts in the spaces between which they are located.

The accompanying drawings show my improvements as applied to a platform particularly adapted to the form of grain-binding harvester on which numerous patents have been granted to me since the year 1881.

Figure 1 is a plan view of a harvester-platform with my improvements applied thereto. Fig. 2 is a vertical longitudinal section there-through on the line 2 2 of Fig. 1, two of the carrier-belts only (the front and rear ones) being shown. Fig. 3 is a plan view of a modification of my invention.

The platform, like those shown in my previous applications, consists of an angle-iron finger-beam or front sill A and rear sill-bar A', united at their ends by the grain-board A² and the outer side bar or rear extension A³ of the main frame. The usual bottom boards a inclose the space between the front and rear sills, strengthening the frame and protecting the carrier-belts B from injury from below.

Much trouble has been experienced in the practical operation of grain-binders by the fact that when the stalks of grain fall upon the platform the heads are carried along by their contact with the moving apron in advance of the butts, which are retarded by the standing grain. This results in the straws lying diagonally on the apron and being carried along by it with their heads some dis-

tance in advance of the butts and presented to the binder in such shape that entanglement of the bundles frequently ensues and slovenly work is turned out by the machine. Attempts have been made to correct this fault by means of endless butting-aprons, &c.; but such devices usually operate upon one end of the straws only, and that through a limited space, and do not get secure hold enough thereon to move the straws throughout their length. To accomplish this object, I construct my platform-carrier of a series of independent belts B, which extend along the platform and around driving and idle rollers C C', respectively, at the ends of the platform. These rollers are so constructed that greater speed is imparted to those belts adjacent to the finger-beam than to those near the rear side of the platform, causing the butts of the straws to have a much faster motion than the heads and in the traverse of the platform to correct the false position into which the straws are at first arranged when starting along with the belts.

As shown in the drawings, the rollers are shaped somewhat like the ordinary cone or change-speed pulleys, increasing in diameter step by step from rear to front, the greater diameter having, of course, greater peripheral speed, and consequently imparting a more rapid motion to the belts. The same result might be attained by means of separate rollers for each belt mounted loosely upon the shaft, all of the same diameter, and driven independently at different rates of speed. This would not be as simple or direct as the means shown for accomplishing this object; but some conditions might make it more desirable to use this than the construction I now prefer.

In addition to the straightening device above described, I also employ the shaft D, mounted in bearings on the finger-beam and rear sill-bar and extending across the platform between the upper and lower surfaces of the belts. On this shaft is mounted one or more arms or horns d, shaped as shown in Fig. 2, with the horn when up pointed toward the coming grain. The shaft revolves in the direction shown by the arrow and at such a speed that the extremity of the horn moves more slowly than the surface of the

adjacent belts. The result of this is that the straws are carried along by the more rapidly moving belts into the concavity of the arms, by which they are caught and momentarily detained, but released by the continued revolution of the arm, which passes below the plane of the belts and leaves the clump of straw which was in its embrace free to be carried along by the belts. The convex or outer side of the arm is so shaped that it will readily pull out of the straw on the belts without becoming entangled with and dragging it down. These arms may be made singly or with two or any desired number cast upon each hub. I have only shown two such retarding-arms working in the spaces between the fifth and sixth and the last two belts; but a greater number may be employed, if desired.

Instead of using these arms as retarders to the heads of the straws, they may be placed near the front of the platform, as shown by dotted lines in Fig. 1, and by suitably changing the sizes of the pulleys, as also shown by dotted lines in Fig. 1, they may be given a greater speed than the belts between which they lie, and thus act as accelerators of the butts instead of retarders of the heads; or yet again, as shown in Fig. 3, the shaft might be made in two parts, with arms on each extremity, the front section of shaft revolving at a higher rate of speed than the adjacent belts and acting as an accelerator of the butts, while the rear section would revolve more slowly than the adjacent belts and act as retarders of the heads of the straws.

The shaft D projects beyond the rear sill and carries on its end a pulley d' , connected by a belt d^2 with another pulley d^3 on the crank-shaft, the relative sizes of the two pulleys being such as to give the desired speed to the shaft D.

In order to prevent the belts from running sidewise on the straight roller C', I mount a series of guide-blocks E upon the bottom boards or any other convenient portion of platform and curve them slightly on their ends, as shown, to permit the free entrance of the belts between them.

A yoke or guard-plate E' is bolted to the finger-beam and closely embraces the front end of the driving-roller C, while the spring-fingers I serve to guide the belts upon this roller. These fingers constitute the clearer-fingers for the platform-aprons, and also the

spring-bottom of the binding-receptacle in which the grain is deposited to be operated upon by the binding mechanism, as fully set forth in my application for a patent on grain-binding harvesters filed May 28, 1885, Serial No. 166,849. The fingers stand at a certain distance above the tops of the rollers and adjacent belt-surfaces, and as the rollers are of larger diameter at front the top surfaces of the belts lie in a higher plane, and consequently the front fingers are higher than those at the rear to have them lie at the proper distance above the adjacent belts. In Fig. 2 only two of the fingers are shown in side elevation, those at the front and rear, the intermediate ones being omitted to avoid confusion.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a grain-carrier composed of a series of endless belts and their rollers, a revolving shaft located between the rollers and the upper and lower surfaces of the belts, fingers on the shaft, which revolve through the spaces between the belts and into the stream of grain thereon in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

2. The combination of the series of endless belts and their rollers, a revolving shaft located between the rollers and the upper and lower surfaces of the belts and provided with hooked fingers, as shown, which revolve through the spaces between the belts and into the stream of grain thereon in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

3. The combination of a grain-carrier composed of a series of endless belts with a revolving shaft provided with fingers which project between the belts and penetrate the stream of grain thereon, acting upon it in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

In testimony whereof I hereto affix my signature in presence of two witnesses.

JOHN S. DAVIS.

Witnesses:

HENRY W. WELKER,
A. E. SUMNER.