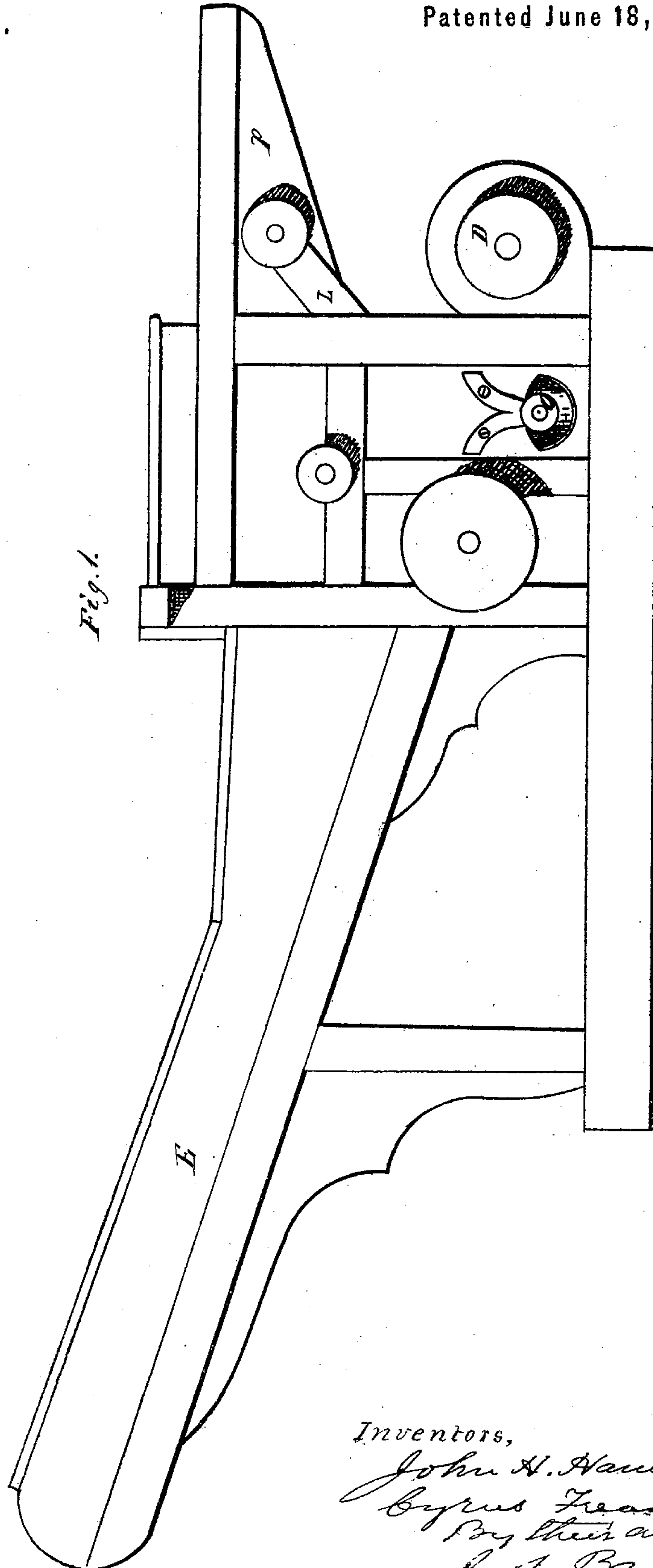


J. H. HAMAKER & C. FREASE.

Improvement in Grain Thrashers and Separators.
No. 128,140.

Patented June 18, 1872.

Fig. 1.



Witnesses,
S. W. Wood
Daniel Breed

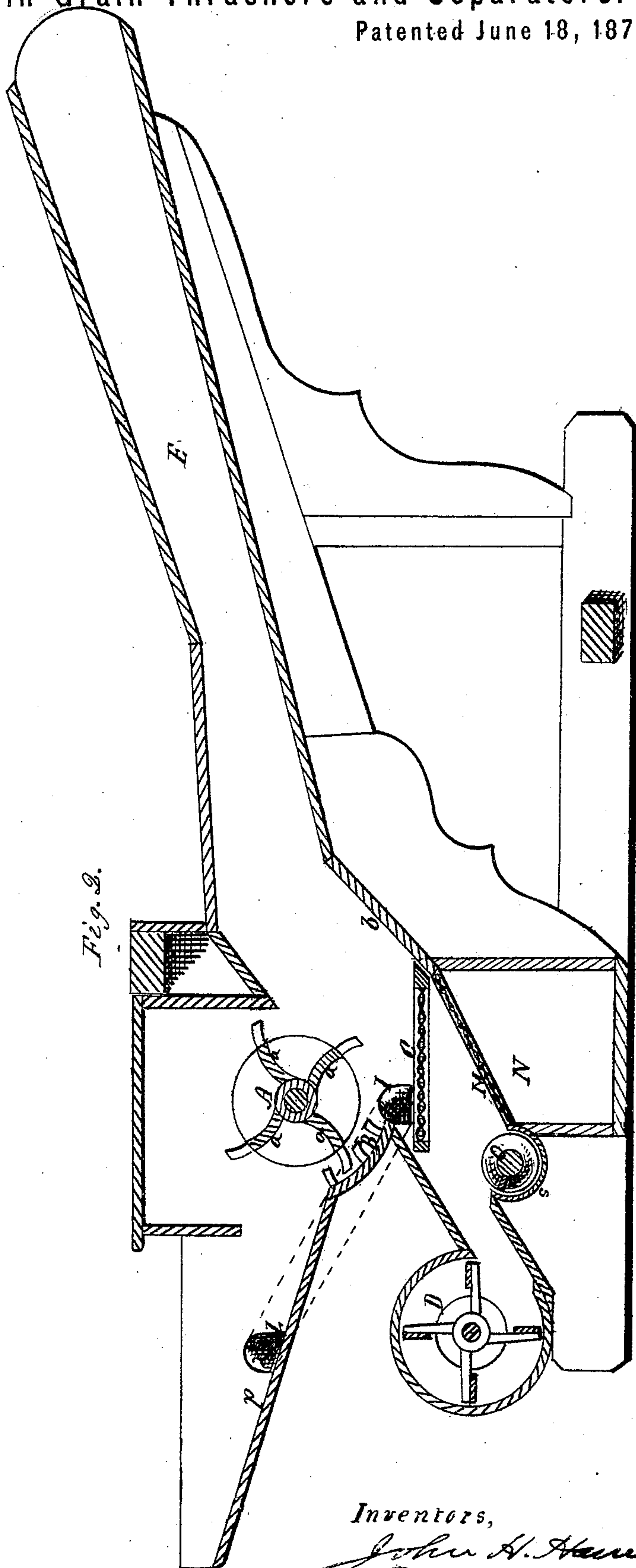
Inventors,
John H. Hamaker
Cyrus Frease
By their attorney,
J. S. Brown

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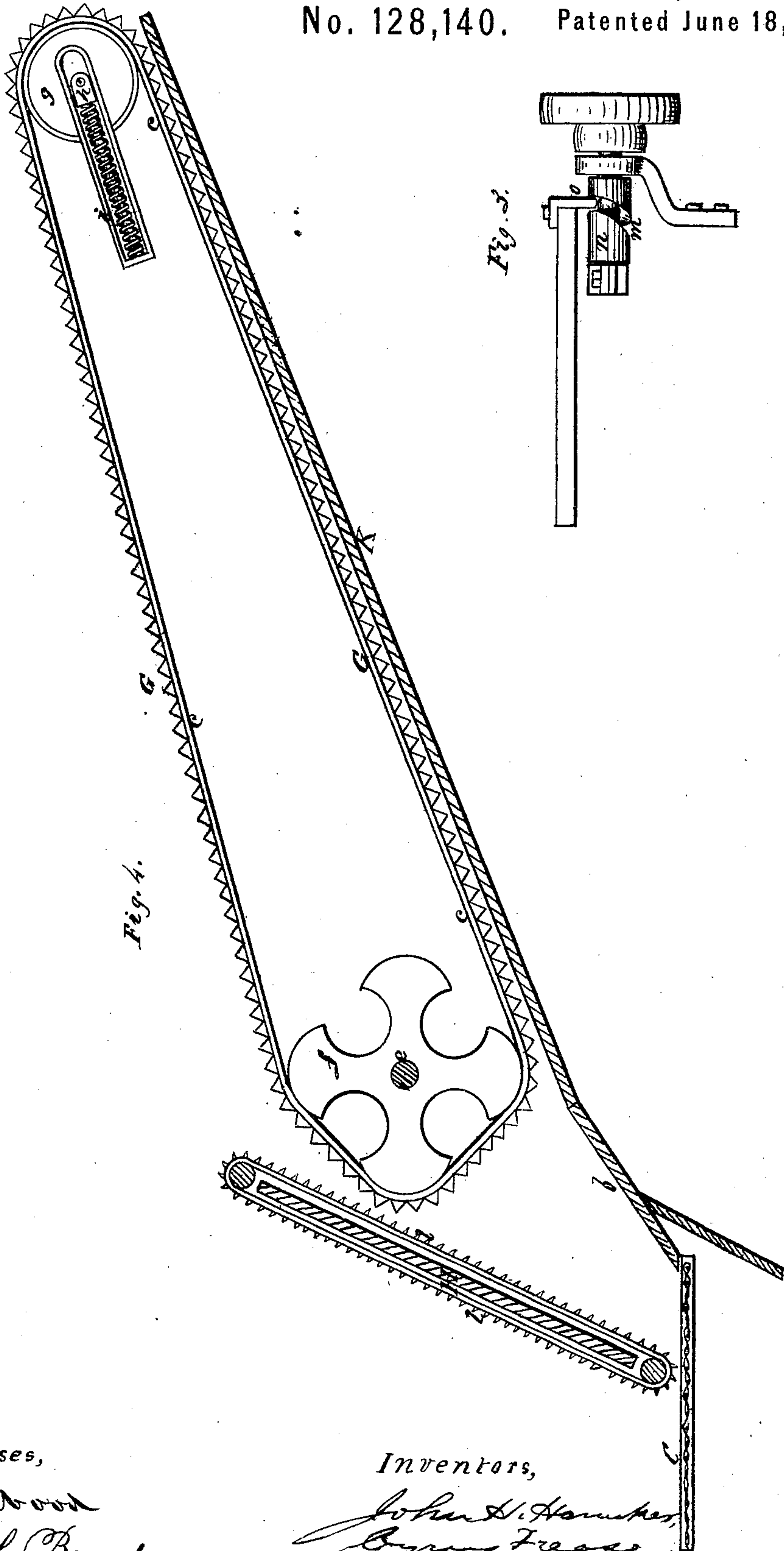
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UNITED STATES PATENT OFFICE.

JOHN H. HAMAKER AND CYRUS FREASE, OF WILMOT, OHIO.

IMPROVEMENT IN GRAIN-THRASHERS AND SEPARATORS.

Specification forming part of Letters Patent No. 128,140, dated June 18, 1872.

To all whom it may concern:

Be it known that we, JOHN H. HAMAKER and CYRUS FREASE, of Wilmot, in the county of Stark and State of Ohio, have invented an Improved Grain-Thrasher and Separator; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification—

Figure 1 being a side elevation of the machine; Fig. 2, a longitudinal vertical section of the same; Fig. 3, a view of a part detached; Fig. 4, a view showing an additional feature not represented in the other figures.

Like letters designate corresponding parts in all of the figures.

The objects aimed at in our improved grain-thrasher and separator are, first, to reduce the machine to the utmost simplicity consistent with the proper fulfillment of all its functions; second, to render the operation of all its working parts as direct and effectual as possible with the least expenditure of power; and third, to apply the operations just where and when they are most efficient.

Let A represent the thrashing-cylinder, and B the concave. Since we employ the force of an air-blast to carry away the straw and chaff and effect their separation from the grain immediately below and back of the cylinder, we create one part of the blast by the cylinder itself. Thus we form vanes *a a* thereon, between the rows of teeth, for this use, so that we dispense with any additional device for the purpose, and secure its application at the very spot where and moment when the separation of the grain and straw is effected. Directly under the cylinder, and extending backward therefrom somewhat, and from the concave B, is located a grain-sieve, C, which effects the complete separation of the grain from the straw and chaff. And in order that the blast produced by the thrashing-cylinder may not tend to blow the chaff and pieces of straw and grain-heads down upon or through this sieve, another blast, or division of the blast, is brought upward through the sieve, and thence joins the upper blast in the passage therefrom. This second blast is produced by an auxiliary fan, D, situated in a convenient position under the front part of the machine; or the fan or fans may be located on the end or ends of the cyl-

inder-shaft and the blast directed therefrom, through a suitable inclosed passage or passages, into the space below the sieve C. This under blast prevents even the lodgment of chaff and other light impurities upon the sieve. Then from the cylinder and sieve an inclosed blast-passage, E, is extended backward, first at a considerable inclination upward for a short distance, as indicated, and thence at a slight inclination upward to the rear end. Through this passage the chaff and straw are driven by the united blast, and any grain which may be carried some distance by the force of the blast with the straw is brought back to the sieve by the steep inclined surface *b* at the bottom of the discharge-passage.

By this arrangement the separation of the grain from the straw is effected close to the thrashing-cylinder immediately after thrashing, and this is the most effectual position in which it can be done, for the reason that when the bundles of grain are fed into the thrasher the heads of grain are first seized by the thrashing-cylinder, and nearly all of the grain is thrashed out before the body of the straw passes through, and hence, the grain being immediately carried down through the sieve and the chaff blown away by the blast, the separation is completed without the mixing of the straw and grain at all. The principle of this action is exemplified when the simple thrashing-cylinder is used without a separator, which always throws the larger part of the grain directly behind the machine, and nearly freed from chaff or straw, by the slight current of air incidentally produced by the thrashing-cylinder.

When the straw is in good condition it may be carried away, through the discharge-passage E, without other aid. But where it is desirable to assist the action of the blast we employ as an additional device a carrier, G, consisting of endless bands *c c*, connected by transverse slats *d d*, formed and arranged substantially as shown in Fig. 4. The upper surface of this carrier has a traveling motion upward and backward by the revolution of the forward shaft *e*, around which it passes. The bands *c c* pass over sprockets *f f* on the shaft, which have separate rounded arms, as shown, so that as they revolve they cause the lower end of the carrier to rise and fall alternately

somewhat, and thus to shake the straw so as to completely separate any grain contained therein. This action of the sprockets would cause an alternate slackening and tightening of the carrier, but the rear end passes around pulleys *g g*, mounted in sliding bearings *h h*, which are pressed backward in slots of the frame of the carrier by springs *i i*, whereby the carrier-bands are kept taut. Under the carrier is an inclined board, *K*, which brings any grain which may be separated from the straw by the carrier to the sieve *C*. A short elevator, *H*, having a steeply inclined position and an endless apron, *l*, with lifting teeth, may be placed before the carrier and reach a little above and over it, to carry up with certainty all the straw from the sieve. The sieve *C* has a transverse vibratory motion, produced by a cam-groove, *m*, in the periphery of a revolving pulley-shaft, *n*, Fig. 3, located on the side of the frame of the machine, in which groove a claw or finger *o* of an arm projecting from the sieve moves. Any heads or parts of heads of grain which may pass through the thrasher and fall upon the sieve, being too heavy to be blown out through straw passage, is shaken from the sieve into a pocket or receptacle, *I*, in one side of the frame, from which an inclined passage extends upward into the side of the feed-trough *p* of the machine. The pressure of the blast behind the thrashing-cylinder, and the partial exhaustion or suction of air before the sieve, causes a strong current or blast to pass up this passage, and serves to convey the heads up to the feed-trough. We propose to assist this blast by a traveling elevator, *L*, as indicated by dotted lines in Fig. 2. Thus, those heads being brought into the feeding-trough are again passed through the thrasher and saved. Under the sieve *C* is an inclined screen, *M*, with a screen-box, *N*, underneath to receive the

screenings. The grain is conducted to one side of the machine by a screw, *O*, revolving in a concave, *S*, or by any other suitable means.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the thrashing-cylinder *A* provided with the vanes or fan-wings *a a*, and the auxiliary fan *D*, or equivalent blast-producing device, arranged in relation to each other and to other parts of the machine, in the manner described and shown, so as to produce a double blast, separate at first, but afterward united beneath and behind the thrashing-cylinder, substantially as and for the purpose set forth.

2. A straw and chaff separator and discharger, consisting of the close blast-passage *E*, in combination with the blast thrashing-cylinder *A* and auxiliary blast-fan *D* or its equivalent, so arranged that the blast of said fan is directed upward and through the grain-sieve *C*, and under and to the rear of the said cylinder, substantially as specified.

3. In combination with the blast-passage *E*, the straw-carrier *G*, constructed, arranged, and operating substantially as specified, as and for the purpose herein set forth.

4. The device described, consisting of the pocket or receptacle *I*, with blast-passage extending upward therefrom, with or without an elevator therein, or the equivalent thereof, for conveying the unthrashed heads of grain from the sieve *C* up to the feed-trough *p*, substantially as herein specified.

Specification signed by us this 13th day of January, 1872.

J. H. HAMAKER.
CYRUS FREASE.

Witnesses:

A. H. STAMBAUGH,
C. W. KLOTZ.