(No Model.)

H. W. STONE, Jr.

SHAKING BOLT.

No. 422,043. Patented Feb. 25, 1890.

Fig. 1.

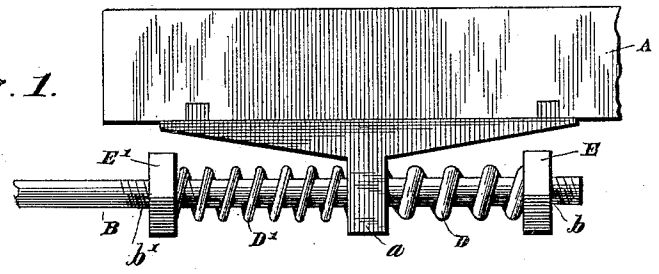


Fig. 2.

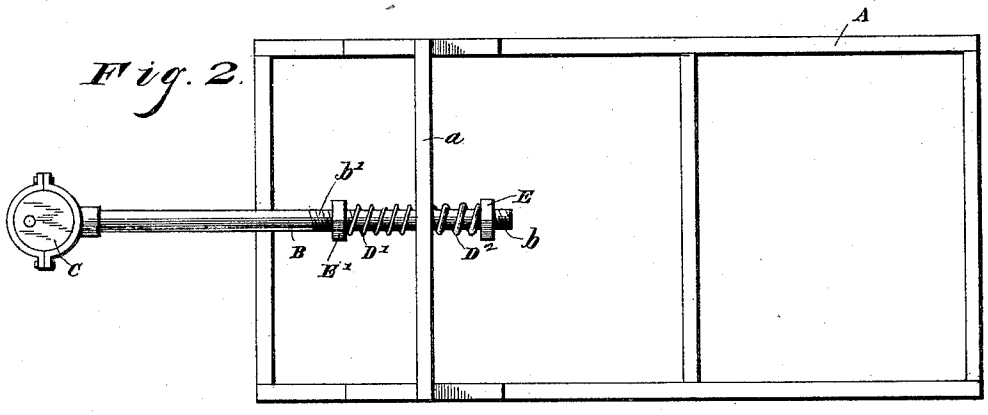


Fig. 3.

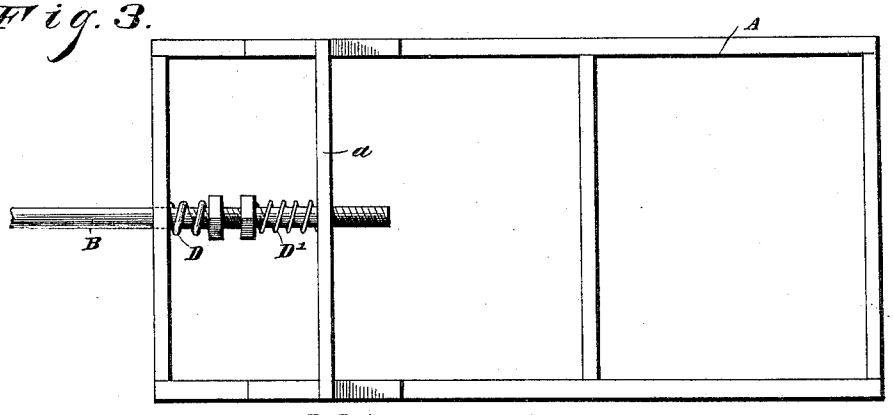
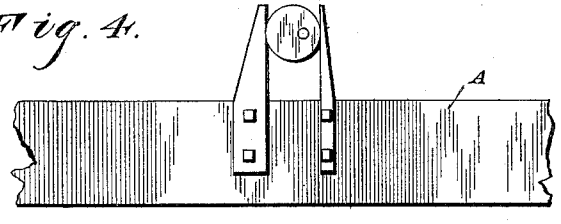


Fig. 4.



Witnesses,

J. M. Withrow

S. T. Riley

Inventor,

Heman W. Stone, Jr.,

By his Attorneys

C. A. Snow & Co.

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

HEMAN WARD STONE, JR., OF MORRIS, MINNESOTA.

SHAKING-BOLT.

SPECIFICATION forming part of Letters Patent No. 422,043, dated February 25, 1890.

Application filed November 7, 1889. Serial No. 329,494. (No model.)

To all whom it may concern:

Be it known that I, HEMAN WARD STONE, Jr., a citizen of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented a new and useful Shaking-Bolt, of which the following is a specification.

The invention relates to improvements in shaking-bolts.

The object of the present invention is to provide a middlings purifier or separator or other cleaning machinery with a shaking-bolt arranged approximately horizontal and capable of causing the grain to move along the same with sufficient rapidity to accomplish the necessary separation of the particles; and, furthermore, the object of the invention is to provide a middlings-purifier with a shaking-bolt in which the rapidity with which the grain travels may be regulated.

The invention consists in the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of the frame of a shaking-bolt provided with operating mechanism constructed in accordance with the invention. Fig. 2 is a reversed plan view. Fig. 3 is a plan view of a modification, showing a different arrangement of springs. Fig. 4 is a side elevation of a modification of the invention.

Referring to the accompanying drawings by letter, A designates the frame of a shaking-bolt which is designed to be employed in middlings-purifiers and all other grain-cleaning machinery, and which is provided with a depending cross piece or flange *a*, which is provided with a circular opening, in which is arranged a rod B, that is operated by an eccentric C, and imparts a reciprocating motion to the sieve-frame, which is slightly inclined, and causes the grain to move along the sieve and down the incline, during which passage the grain is separated, as is well understood. The rod B extends through the opening of the depending portion *a*, and is provided upon one side—the one farther from the eccentric—with a short heavy spring D, and on the other side of the depending portion with a lighter and more elastic spring D′, which springs act as a cushion and serve to take up the shock at the end of each motion. The spring D, which is farther from the eccentric end of the rod B, is constructed of heavier metal and is shorter than the other spring D′, and is therefore stiffer and less yielding, and its cushioning action is therefore less, and at the end of the stroke which carries the sieve down the inclined plane in which it works the sieve will be more abruptly stopped and more quickly started on its return-stroke up the said inclined plane by the stronger spring D than will be the case at the other end of the stroke by the weaker and more elastic spring D′. The result is, that the grain is caused to move rapidly along the sieve, and the latter is enabled to be arranged approximately horizontal. It is evident that the more gradually the sieve is started on its stroke down the inclined plane or away from the eccentric end of the rod the more will the grain on the sieve be caused to follow its downward course, while, on the other hand, the more abruptly the sieve is stopped at the end of the stroke and started on the return-stroke the more will the momentum of the grain cause the same to move forward upon the sieve or toward the lower end of the latter, and it will thus be seen that by regulating the relative elasticity of the springs or cushions the rapidity with which the grain travels may be regulated.

The rod B is provided with a threaded end *b*, which receives a nut E, that retains the stouter spring D on the rod, and the said rod is provided with a threaded portion *b*′, which receives a nut E′, which regulates the tension or elasticity of the spring or cushion D′.

I desire it to be understood that I do not limit myself to the precise details of construction herein shown and described, as I may, without departing from the spirit of the invention, make minor changes therein, such as omitting the stouter spring or employing a rubber cushion instead, or in any other way varying the elasticity of the cushions at the sides of the depending portion *a* of the frame, in order to cause the frame of the sieve to be more abruptly stopped and started at the end of each downward stroke, or the stroke away from the eccentric end of the rod B, in order to cause large grain or middlings to move

along the sieve and enable the latter to be arranged approximately horizontal.

The light and elastic cushion or spring D′ is essential; but the arrangement of the spring may be varied, as is illustrated in Fig. 3. The springs should be arranged with reference to the direction in which the material or grain upon the sieve is intended to move, so that the heavier or stronger receives the thrust at the end of the stroke that carries the sieve in the direction the grain is moving to abruptly stop the sieve and throw the grain forward, while the weaker and more yielding spring receives the thrust at the end of the opposite thrust and prevents the sieve being abruptly stopped and interfering with the motion of the grain.

In Fig. 4 of the accompanying drawings I have illustrated a modification of the invention, in which the sieve is provided with two vertically-arranged spring-arms, between which an eccentric operates in order to impart to the sieve a reciprocating motion. By constructing one of the vertically-arranged spring-arms stouter and more inelastic than the other the result heretofore described may be attained.

Having thus described the invention, what I claim is—

1. The combination of the sieve-frame, the rod connected thereto and imparting to the frame a reciprocating motion, and the cushions of unequal size and strength arranged upon each side of the point of attachment of the rod to the sieve-frame, and the nuts on the rods for adjusting the cushions, substantially as and for the purpose described.

2. The combination of the sieve-frame provided with a depending portion *a*, having an opening therein, the rod D, arranged in said opening and provided with the threaded portions *b* and *b*′, the nuts engaging said threaded portions, the heavy elastic spring D^2, arranged upon one side of the depending portion *a*, and the light elastic spring D′, arranged upon the opposite side of the depending portion *a*, substantially as and for the purpose described.

3. In a shaking-bolt, the combination of the sieve, the means for imparting a reciprocating motion to the sieve, a heavy spring or cushion to receive the thrust of the sieve-actuating means at the end of the stroke carrying the sieve in the direction in which the grain is moving, and a light, weaker, and more yielding spring or cushion to receive the opposite thrust, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HEMAN WARD STONE, Jr.

Witnesses:
WM. C. BICKNELL,
MAGGIE FRYBERGER.