(No Model.) 2 Sheets—Sheet 1.

J. E. MUSTARD.

BUTTER FOR GRAIN BINDERS.

No. 532,896. Patented Jan. 22, 1895.

FIG. 1.

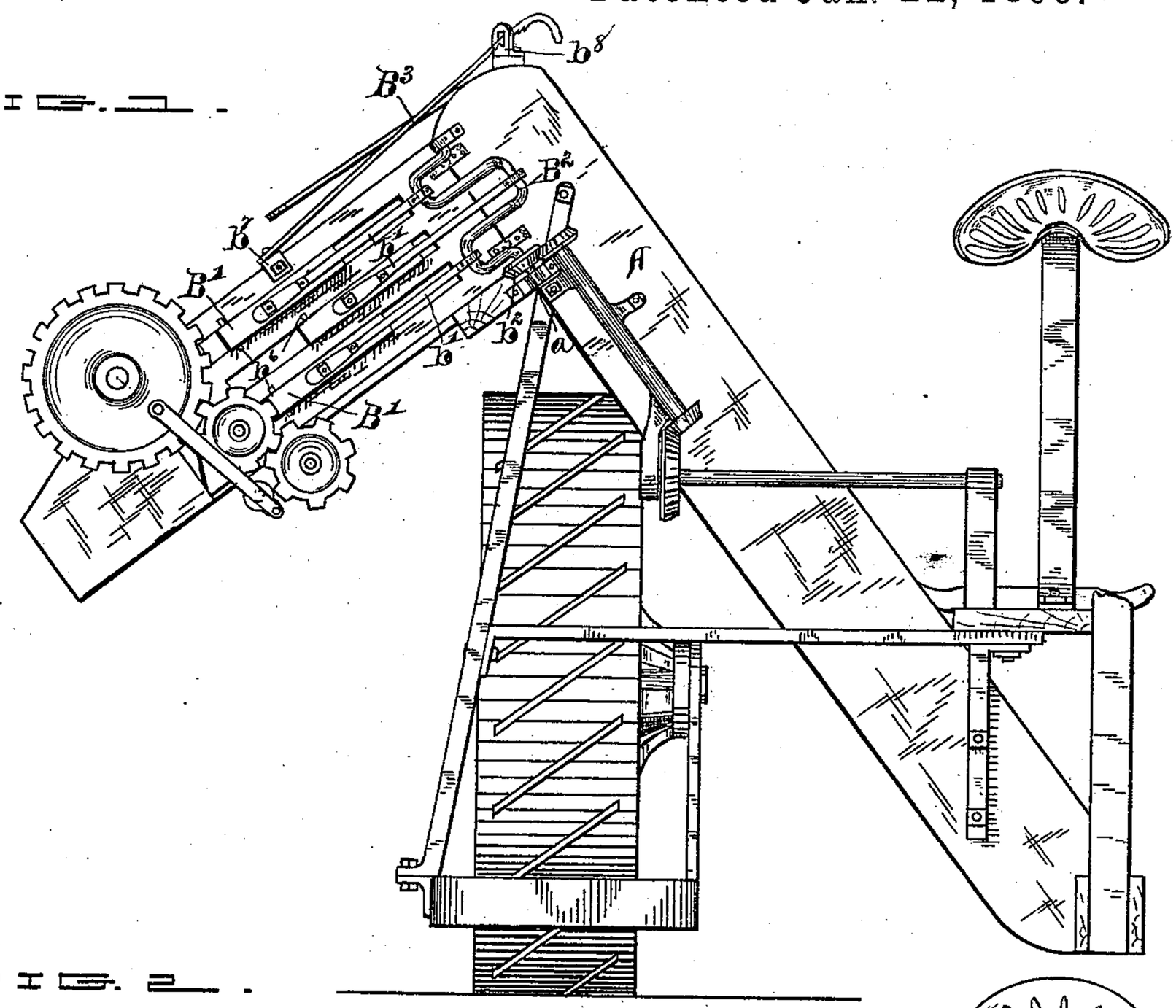
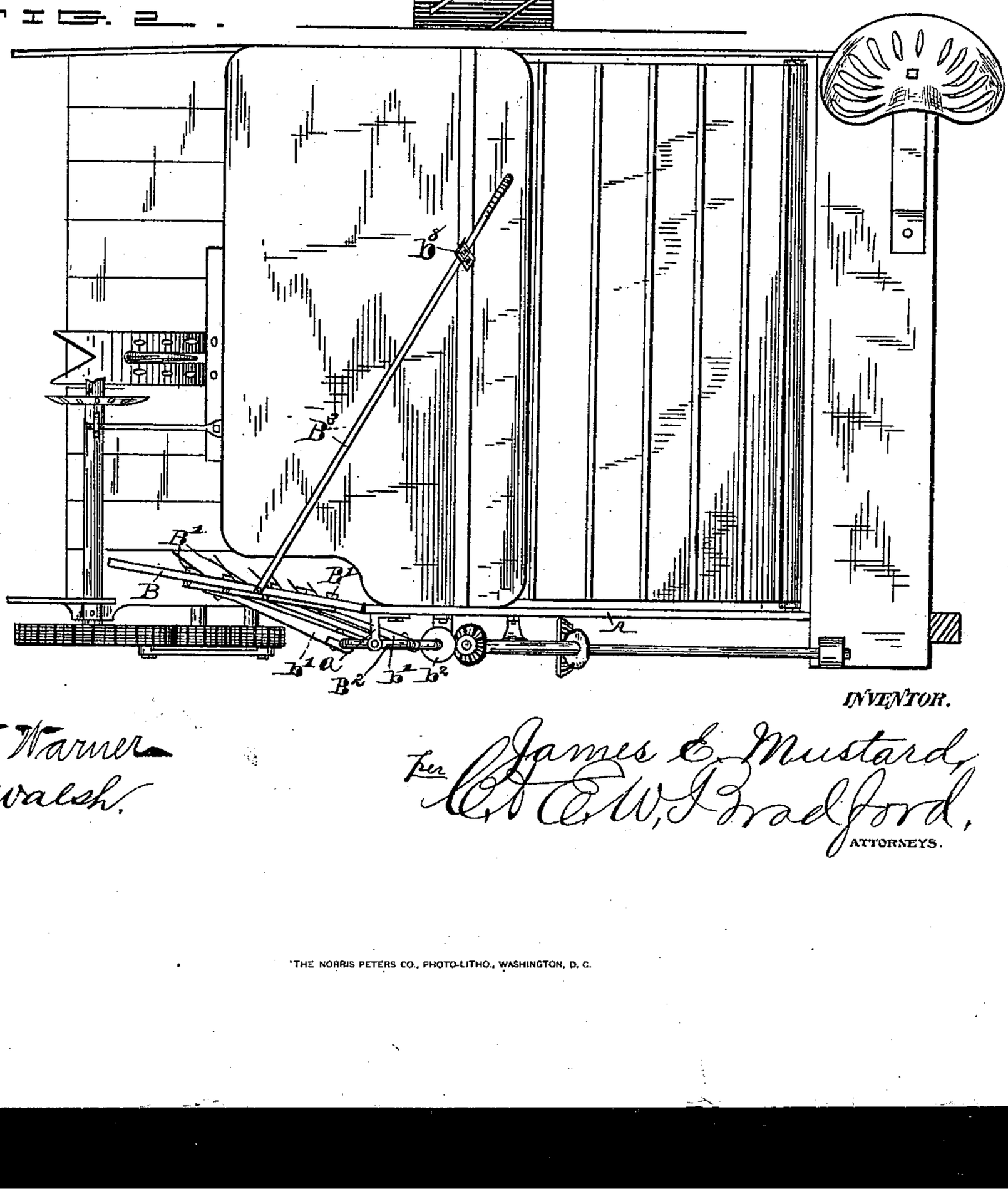


FIG. 2.



WITNESSES.

F. W. Warner

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INVENTOR.

per James E. Mustard,

C. F. & W. I. Bradford,

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

J. E. MUSTARD.

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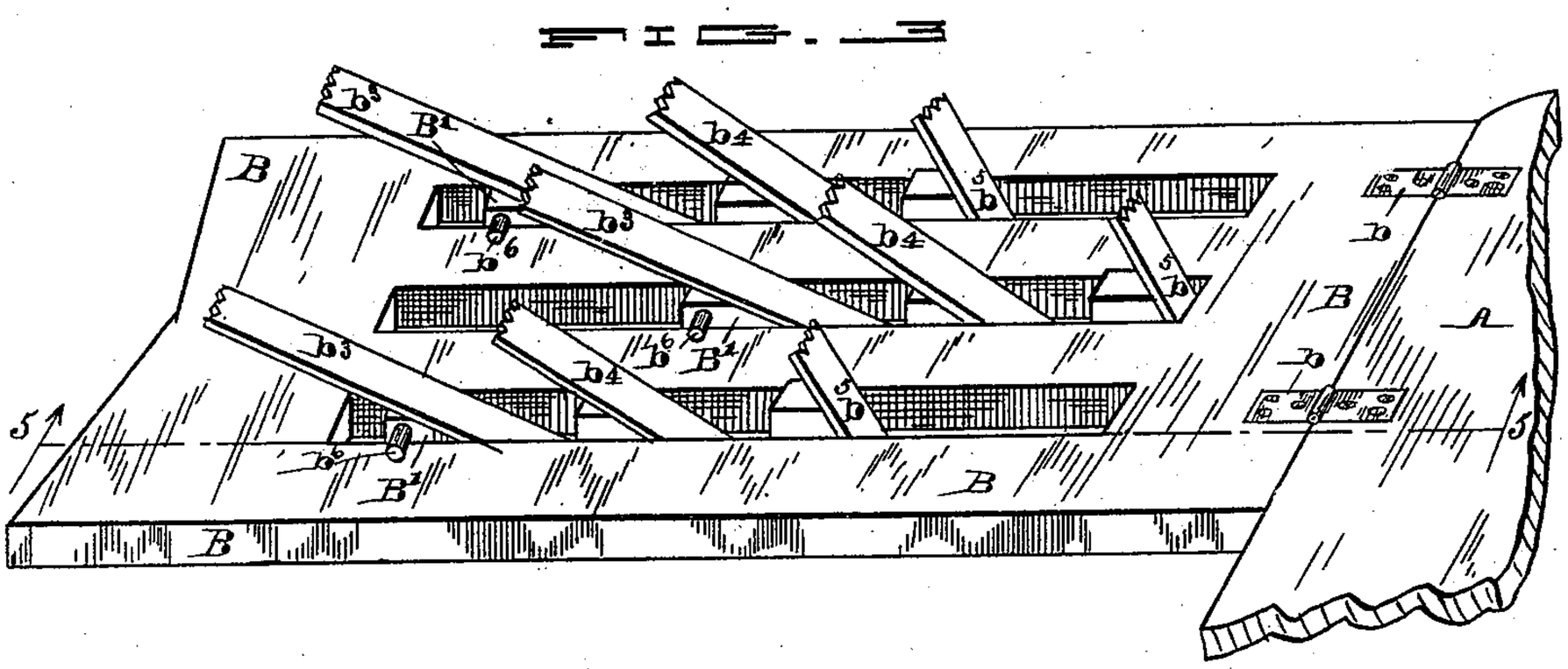

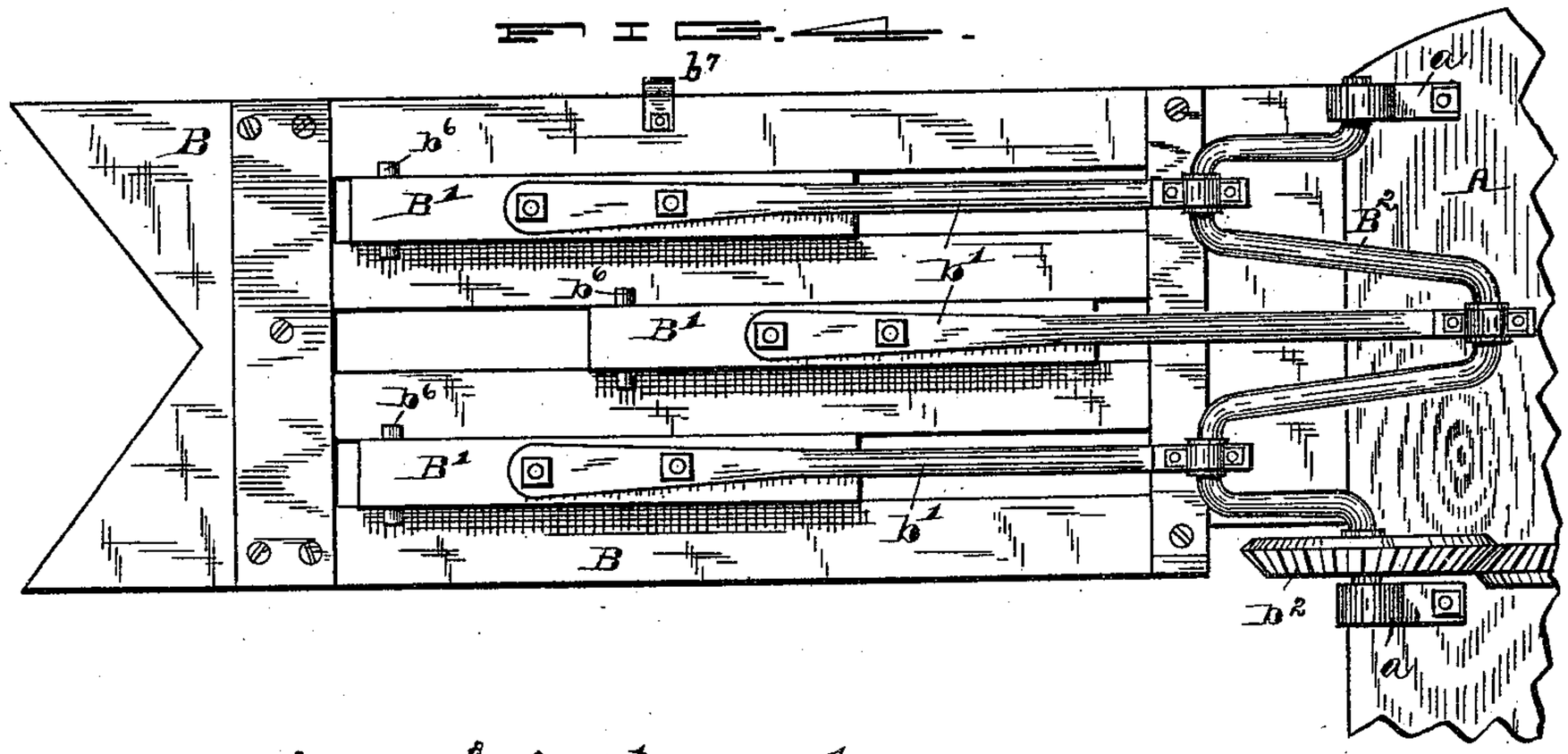

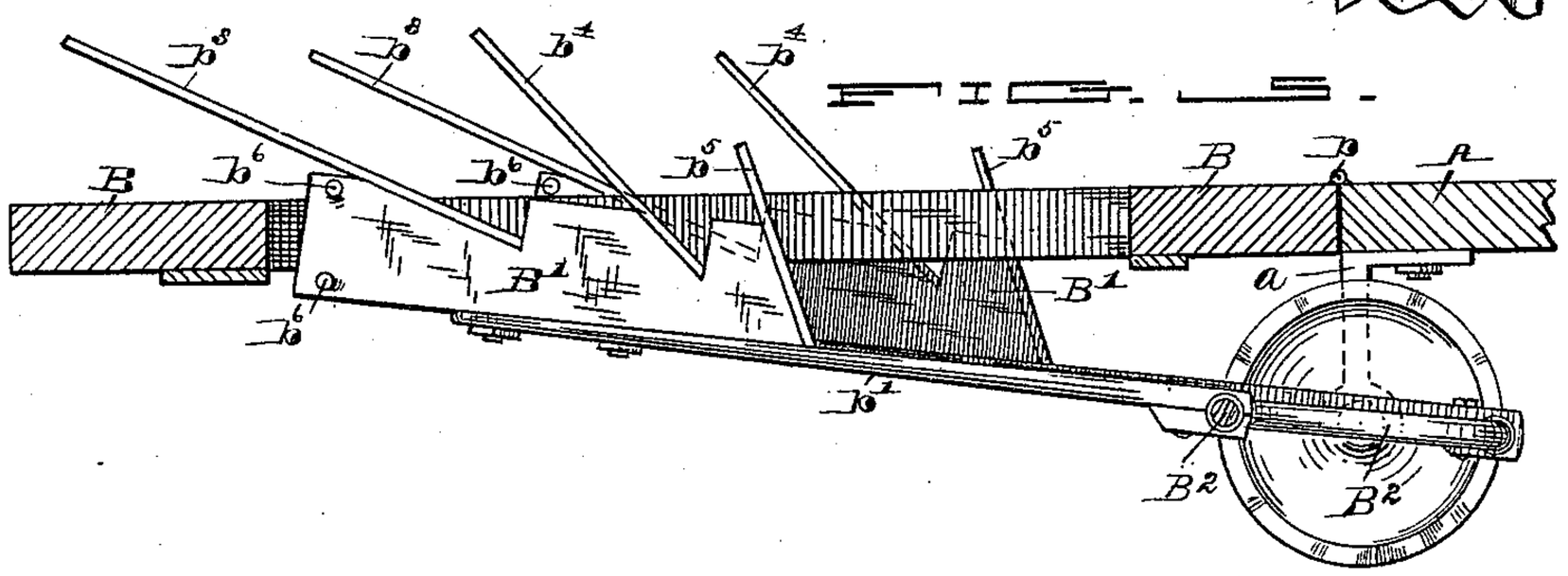

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UNITED STATES PATENT OFFICE.

JAMES E. MUSTARD, OF GLEN HALL, INDIANA.

BUTTER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 532,896, dated January 22, 1895.

Application filed August 4, 1891. Serial No. 401,625. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. MUSTARD, a citizen of the United States, residing at Glen Hall, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Butters for Grain-Binders, of which the following is a specification.

My said invention consists in an improved construction of that device forming part of a grain-binder structure commonly known as a "butter," or the device for adjusting the butts of the grain straws into the proper relation with each other and the binding mechanism, whereby such a device is provided which operates continuously, and one by which the labor is performed with increased efficiency, all as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a front elevation of that portion of a grain binder on which the binding mechanism is located; Fig. 2, a top or plan view of the same; Fig. 3, a detail perspective view of my improved butter on an enlarged scale; Fig. 4, a rear elevation of the same, and Fig. 5, a longitudinal sectional view looking in the direction indicated by the arrows from the dotted line 5. 5. in Fig. 3.

In said drawings the portion marked A represents the side board of the elevator framework to which my improved butter is attached, and B said butter.

In general the machine is or may be of any construction desired; that illustrated in the drawings being one of those in common use, showing my invention attached thereto. It will, therefore, not be necessary to herein describe the construction of said machine except to incidentally mention those parts with which the device constituting my invention is connected either in construction or operation.

The butter B consists of a board or frame hinged at its upper end to the lower edge of the side-board A on the front side of the elevator, by means of hinges *b*, its other end extending onto the grain-deck, or place where the bundles are formed, and its lower edge resting on the floor thereof. A series of longitudinal ways are formed in said board or frame in each of which a base B′ is mounted to slide. In suitable bearings *a* secured to and projecting out from the side-board A is journaled a compound crank shaft B^2 formed of as many cranks as there are sliding bases B′, said cranks preferably extending alternately in opposite directions from the center of the shaft. Each of said bases B′ is connected by a rod *b′* with the transverse portion of that crank of said shaft which is in line therewith, a suitable box being formed on the outer end of each of said rods for engaging with the crank. On the lower end of said crank shaft a miter gear wheel b^2 is mounted which is arranged to mesh with a similar wheel on the end of a shaft journaled in bearings on said side-board A, and connected with the driving power by any suitable gear. To each of the bases B′ is formed, as shown, a series of seats for outwardly extending fingers b^3, b^4 and b^5, which are secured thereon by screws, or in any suitable manner. Each of said fingers is preferably formed of spring metal, and the seat for each of the outer fingers b^3 is formed on a gradual incline. Said fingers are also formed of greater length than the others, and thus extend farther onto the grain-deck but on an angle of less pitch. The fingers b^4 are similar in formation and secured to their seats in a similar manner, but said seats are formed on an angle of greater pitch and are not of as great a length. The fingers b^5 are still shorter, and the seats on which they are secured have a yet greater angle. The outer end of each of said fingers is preferably formed serrated, as shown. The outer end of each of the bases B′ is secured in the way in which it is mounted by means of transverse pins b^6, which extend through the same and project on each side of the board or frame B. To the upper edge of said board B is secured an ear b^7 to which a rod B^3 is connected, which rod runs through a clip b^8 on the top of the cradle and ends in the handle within convenient reach of the driver, sitting upon the seat of the machine. For a short distance each side of said clip b^8 the lower edge of said rod b^7 is formed notched, which notches are adapted to engage with the lower corner of the perforation in said clip. By this arrangement the operator is enabled

to adjust the lower end of the butter frame in or out as the demands of the work may require, it being held in the desired position by means of the notches in the rod B^3.

The operation of my said invention is as follows:—The grain being elevated and deposited in the cradle in the ordinary manner, and the butter mechanism being in operation, the crank shaft B^2 operates to drive the bases B′ and the fingers mounted thereon back and forth, the alternate bases being driven in alternate directions. In the drawings only three of these bases are shown, the two outside ones being geared to operate together while the central one operates oppositely and alone, but as will be readily understood, any number of these sliding bases might be used without departing from my invention, and geared to operate as desired. In the construction shown the two outer series of fingers being forced downwardly operate to catch the butts of the straw being delivered into the cradle from the elevator by their serrated edges, and push it along toward the knotting mechanism and at the same time crowd it over toward the other side of the machine sufficiently to bring the butts into proper relation with said knotting mechanism. While the outside series of fingers are being forced down the central series are being drawn back, and the rear faces of the fingers b^3 and b^4, (particularly those of the fingers b^3) are being pressed against the butts of the straw, which operates to "even up" said butts, and also to crowd them in the desired direction toward the knotter. As the downward stroke of the outside bases is completed the center base commences its stroke and performs the work which the outside ones have just been performing, while the outside ones return and perform the work which the central one has just been performing, thus maintaining a continuous operation in both directions at all times. As will be readily understood, the lower ends of the bases are maintained in the same relative position to the inner face of the butter or frame at all times by reason of being secured in the ways as described. Thus the outer fingers b^3 travel in a fixed position in relation to the frame, which enables the driver, by means of the rod B^3, to adjust the butter when cutting grain of different lengths so that said butter will operate to bring the various lengths of grain into the same relative position with the binding mechanism, thus adjusting the straw as required to secure the best results in tying it. At the beginning of the return movement the crank shaft operates to throw the upper end of each base outwardly, and thus withdraw the finger b^5 thereon from the cradle. Said rear fingers thus travel in the plane with the forward fingers during their downward movement only, and are, therefore mounted on seats of greater pitch than said other fingers, whereby they may be made shorter and yet project into the cradle the same distance as the others during the downward movement during which they operate as do the other fingers to push the straw downward and in the direction of the binding mechanism. It will thus be seen that said rear fingers b^5 operate only during the downward movement and only for one purpose while the forward fingers b^3 perform a similar operation during the downward movement and the additional operation during the return movement of evening up the butts of the straws as before described. The intermediate fingers b^4 also assist in said work during the backward movement, but do not operate to crowd the straws over as far as do the fingers b^3 because of the fact that the outward turn of the crank operates to partially withdraw them from the cradle. The various angles of the fingers also enable them to catch the straws lying in various positions with greater certainty and thus increase the effectiveness of the device for the purpose.

It will be understood, of course, that more than three fingers might be provided on each base or that a less number might also be used and that they might be secured in their respective ways by other means than the pins shown, and also that the bases and rods connecting them with the crank shaft might be formed of single pieces of cast metal if preferred, and various other mechanical changes made in construction, without departing from my invention.

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

1. A butter for grain binders consisting of a frame arranged at one side of the grain-deck and provided with a series of longitudinal ways, reciprocating bases mounted in said ways, fingers secured to suitable seats in said bases and projecting into the grain-deck, a compound crank shaft with its cranks on different sides of the center to which said bases are connected, and suitable gearing for driving said shaft, substantially as set forth.

2. The combination in a grain binder, of a butter therefor consisting of a frame formed with longitudinal ways and hinged at one side of the grain-deck, reciprocating bases mounted in said ways and connected with a crank shaft for operating the same, the forward end of each of said bases being secured from moving transversely out of said ways, a series of fingers mounted on each of said bases the one on said forward end being mounted to extend within the grain-deck a considerable distance and on a gradual incline, substantially as shown and specified.

3. The combination with a grain binder, of a butter consisting of the frame B hinged at one side of the grain-deck formed with longitudinal ways as described, the reciprocating bases B′ mounted therein with their lower ends secured therein by means of transverse pins extending through on each side of said frame their upper ends being secured to the cranks of a compound crank shaft, said crank

shaft journaled in suitable bearings on the frame A, gearing for driving said crank shaft, and the series of fingers b^3, b^4 and b^5 mounted on each of said bases, being formed of different lengths and extending out therefrom at different angles, substantially as shown and described.

4. A butter for grain binders consisting of a series of reciprocating arms each connected at one end to separate cranks extending in different directions of a compound crank-shaft, which crank-shaft is journaled in suitable bearings on the elevator frame and connected with the driving mechanism by which it is operated, the other ends of said reciprocating arms being connected to slide along a suitable part of the elevator frame by which they are held in the desired adjustment, inwardly-projecting fingers being provided on each of said arms, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Glen Hall, Indiana, this 28th day of July, A. D. 1891.

JAMES E. MUSTARD. [L. S.]

Witnesses:
CHRISTOPHER C. TAYLOR,
THOS. DAVIS.