

No. 843,442.

PATENTED FEB. 5, 1907.

J. B. CORNWALL.
SHAKING SCREEN, &c.
APPLICATION FILED MAR. 21, 1906.

2 SHEETS—SHEET 1.

Fig. 1

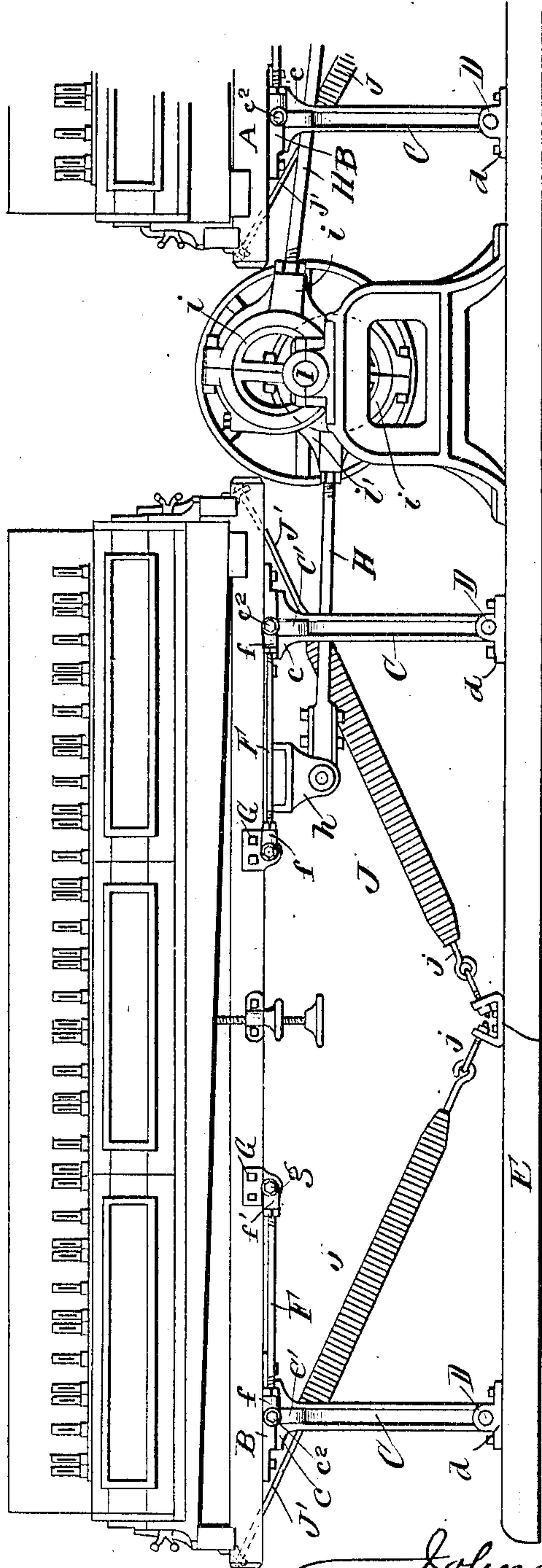
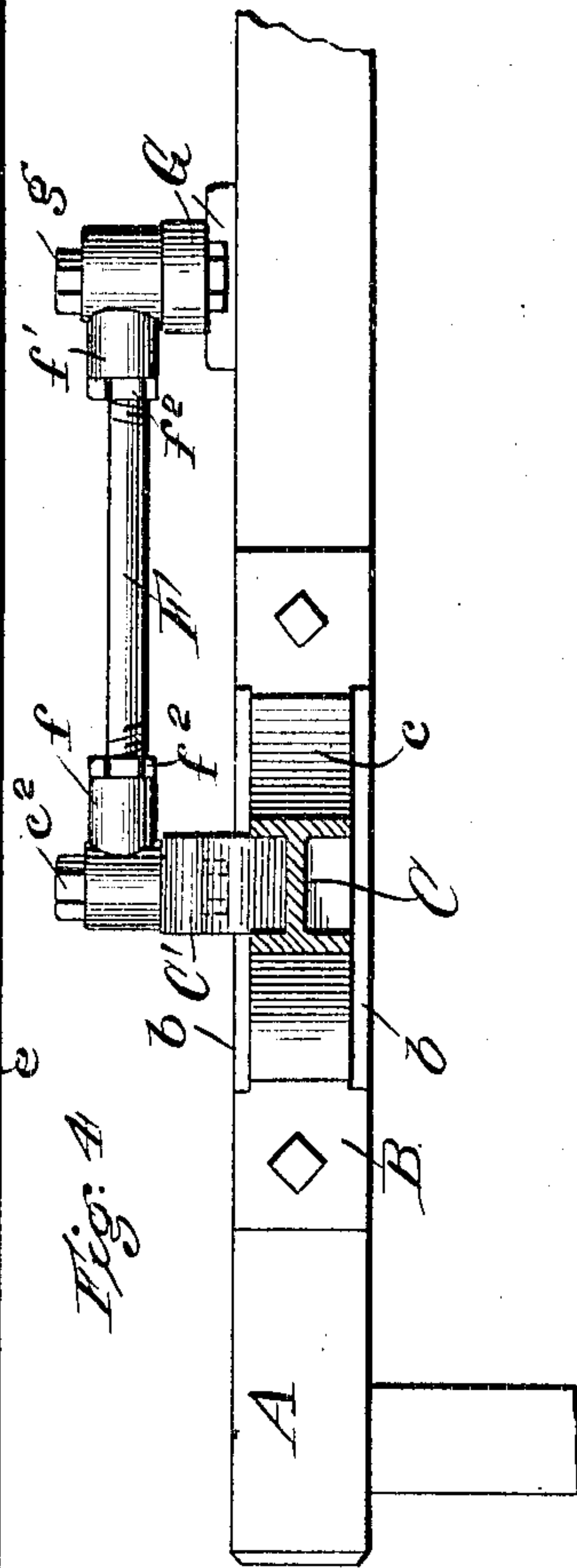


Fig. 4



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2 SHEETS—SHEET 2.

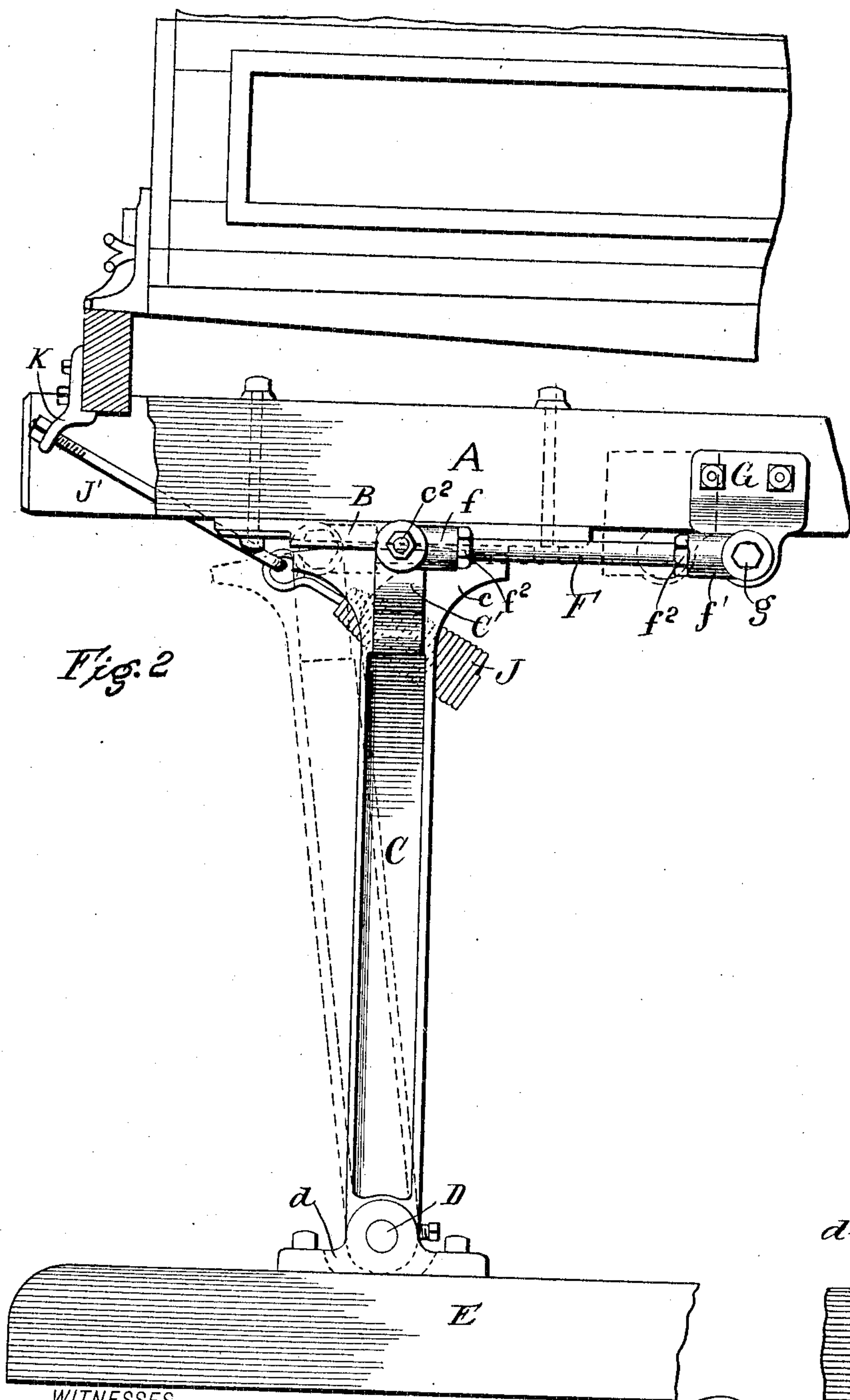
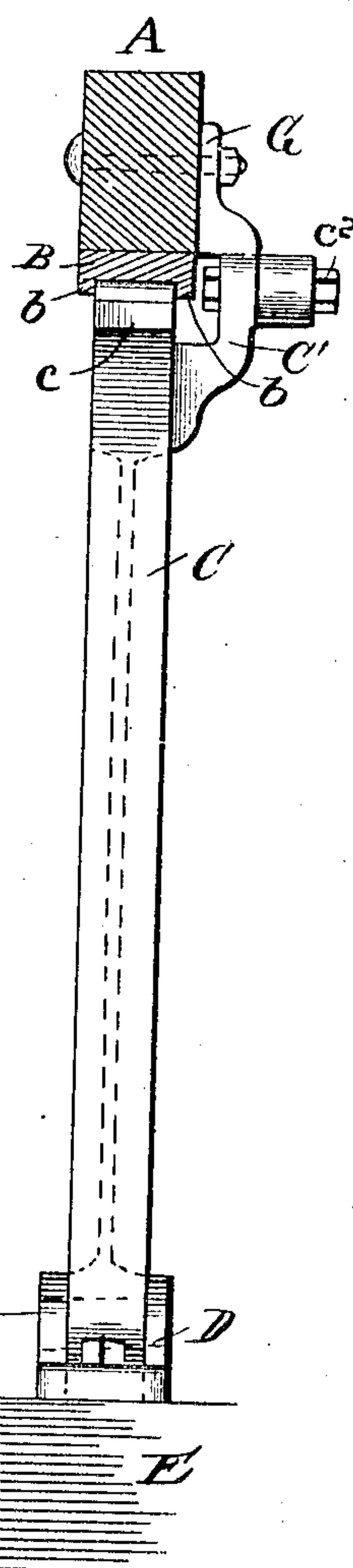


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN B. CORNWALL, OF MOLINE, ILLINOIS, ASSIGNOR TO BARNARD AND LEAS MANUFACTURING COMPANY, OF MOLINE, ILLINOIS.

SHAKING-SCREEN, &c.

No. 843,442.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed March 21, 1906. Serial No. 307,243.

To all whom it may concern:

Be it known that I, JOHN B. CORNWALL, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Shaking-Screens, &c.; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in shaking screens, separators, sieves, and like machines in which the shaker-frame is to be reciprocated in a single exact horizontal plane.

The invention consists substantially in the novel construction and connections of the up-standing rocker-arms by which the shaker-frame is supported, such arms being pivoted at their lower ends and having curved rocker-heads on their upper ends upon which the shaker-frame rests, said heads engaging plane-surfaced bearing-plates attached to the shaker-frame. The rocker-heads are kept from lateral displacement by side flanges and from longitudinal displacement relative to the shaker by means of connecting-rods each pivoted at one end to the shaker-frame and at the other end to a lug on the adjacent rocker-head, the centers of the pivots being in line with the contact-point of the rocker-head and bearing-plates.

The invention further includes novel means for steadying the movement and lessening jars on the shaker-frame, consisting in a novel arrangement of springs by which the reversals of movement are cushioned and the efficiency of the machine is increased.

The shaker-frame may be reciprocated longitudinally by eccentrics and connecting-rods. By the aforesaid means the shaking-screen can be supported and moved in one perfectly-level plane.

The invention will be more fully understood from the following description of the machine illustrated in the accompanying drawings, which illustrate a paddy-rice separating-machine embodying the invention, and the features and combinations of parts for which protection is desired are summarized in the claims.

In said drawings, Figure 1 is a side eleva-

tion of a complete machine. Fig. 2 is an enlarged side view of one of the supporting devices. Fig. 3 is a front elevation of Fig. 2. Fig. 4 is a detail view showing the connection between the springs and shaker-frame.

The screen or separator may be of any desired construction and kind for which a horizontal reciprocating motion is desired and is mounted upon a lower shaker-frame A, to which are secured at four or more points bearing-plates B, which may be of cast-iron and preferably extend longitudinally of the frame and are provided with side flanges *b*, being dressed perfectly true between the flanges. The said bearing-plates rest upon rocker-heads *c* on the upper ends of rocking arms or supports C, which are pivoted at their lower ends and can swing or rock longitudinally of the shaker-frame. The upper edge of each rocker-head *c* is curved on an arc concentric with the axis of the pivot of the arm, so that the shaker-frame A will be maintained in one uniform horizontal plane during its reciprocations.

The arms C, as shown, are arranged in pairs, and the adjacent arms in each pair are mounted on rock-shafts D, journaled in boxes *d*, attached to a suitable fixed base E. Each arm C is provided with a laterally-projecting bracket C' on its upper end, to which bracket is pivotally connected one end of a rod F by means of a stud-bolt *c*² passing through an eye *f* on the rod and engaging the bracket C', as shown in Figs. 2 and 3. The axis of the bolt *c*² is directly in line with the point of contact of the rocker-head *c* and the bearing-plate B when the rocker-arm is in vertical position. The other end of rod F is connected to an eye *f*¹, which engages a stud-bolt *g* on a bracket G, attached to the shaker-frame so as to be immovable relatively to the bearing-plate B. By this means the upper part of each rocker-arm is so connected to the shaker-frame that while the arm can rock or swing thereunder it cannot be displaced longitudinally thereof.

The rod F may be adjustably connected to the eyes *f f*¹ by means of screw-threads and sockets and locking-nuts *f*², so that the rocking arms may be accurately adjusted relatively to the bearing-plates.

The rocker-arms are maintained in proper relative position to the bearing-plates and shaker-frame without any direct connection between the arm and bearing-plates, although the arms are connected with the shaker-frame by the rods F.

With such parts properly constructed the shaker-frame can be easily reciprocated longitudinally and will operate more smoothly and easily than do machines wherein the rocking bearings are at the lower ends of the arm. Furthermore, there is less liability of lateral vibration of the shaker-frame and it is maintained in one exact horizontal plane at all parts of its stroke.

The shaker-frame may be reciprocated by any suitable means. As shown in the drawings, a rod H is pivotally connected at one end to a bracket h, fastened to the frame A, and the other end of said rod is connected to an eccentric-strap i', engaging an eccentric i on a transversely-arranged shaft I, journaled in suitable supports adjacent the end of the shaker-frame.

In order to steady the action of the machine, lessen the shocks of reversal, and hold the frame down upon rock-arms, I employ springs J J, (see Figs. 1 and 4,) which are connected at their lower ends by shackle-bolts j to a bracket e, attached to the base E about centrally of the shaker-frame, and said springs extend upwardly in opposite directions and are respectively connected by bolts J' to brackets K, attached to the ends of the shaker-frame A. The tension of the springs is regulable by adjusting-nuts j on bolts J'. By this arrangement of springs the momentum of the shaker-frame will be overcome, close contact will be maintained between the eccentric-strap and the eccentric, and an easier running action is obtained.

The springs can be arranged at different angles to the shaker-frame, and one of their important functions is to hold down the frame upon the rocker-arms as well as to cushion the reversals thereof. The nearer the springs approach the perpendicular the stronger they must be, as they will be less extended in the more inclined position.

The method of construction shown in the drawings produces a smoother and more desirable motion in the shaker than has hitherto been accomplished and the shaker is less liable to disarrangement by wear than in the heretofore known machines.

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

1. The combination of rocker-arms pivoted at their lower ends and having their upper ends curved, a shaker-frame, bearing-plates attached to the shaker-frame and resting upon the curved upper ends of the arm, and rods

pivotally connected to the said arms and said frame to prevent longitudinal displacement of the arms.

2. In combination, upstanding rocker-arms pivoted at their lower ends and having their upper ends curved on arcs concentric with their pivots; a shaker-frame supported upon the upper ends or heads of said rocker-arms, and rods pivotally connected to the upper ends of said arms and to the shaker-frame.

3. In combination, upstanding rocker-arms pivoted at their lower ends and having heads on their upper ends curved on arcs concentric with their pivots; a shaker-frame supported upon the said rocker-arms, bearing-plates attached to the under side of the shaker-frame and engaging the rocker-heads of the arms, and rods pivotally connected at one end to said arms and at the other end to a fixed point on the frame.

4. The combination of a base, a shaker-frame, rocking arms supporting said frame, said arms being pivoted to the base and having a rocking connection with the frame, and means for reciprocating said frame; with opposing inclined springs attached at their upper ends to the opposite ends of the frame exterior to the rocker-arms, and at their lower inner ends secured to fixed points on the base about centrally below the frame.

5. The combination of a shaker-frame, rocking arms pivoted at their lower ends and having curved upper ends supporting said frame, and means for reciprocating said frame; and rods pivotally connected at one end to said arms and at the other end to a fixed point on the frame; with opposing springs attached at their outer upper ends to the opposite ends of the frame, and at their lower inner ends to fixed points below the shaker-frame.

6. In combination, a shaker-frame, upstanding rocker-arms pivoted at their lower ends and having heads on their upper ends supporting said frame; bearing-plates attached to the under side of the shaker-frame and engaging the rocker-heads of the arms, and rods pivotally connected at one end to said arms and at other end to fixed points on the frame; with springs connected to the base below the shaking-frame and extending upwardly and outwardly in opposite directions and having their upper ends respectively connected to the opposite ends of the shaker-frame.

7. In combination, upstanding rocker-arms pivoted at their lower ends and having their upper ends curved on arcs concentric with their pivots; a shaker-frame supported upon the upper ends of said rocker-arms, and bearing-plates attached to the under side of the shaker-frame and engaging the upper ends of the arms; with rods pivotally connected at

one end to said arms and at other end to a
fixed point on the frame; and springs con-
nected at their lower ends to the base and
having their upper ends respectively con-
5 nected to the opposite ends of the shaker-
frame, and means for reciprocating the frame.

In testimony that I claim the foregoing as

my own I affix my signature in presence of
two witnesses.

JOHN B. CORNWALL.

In presence of—

C. D. NEAL,

STEPHEN D. RAY.