

(No Model.)

2 Sheets—Sheet 1.

R. S. MUNGER.

SAW GIN.

No. 396,706.

Patented Jan. 22, 1889.

Fig. 1.

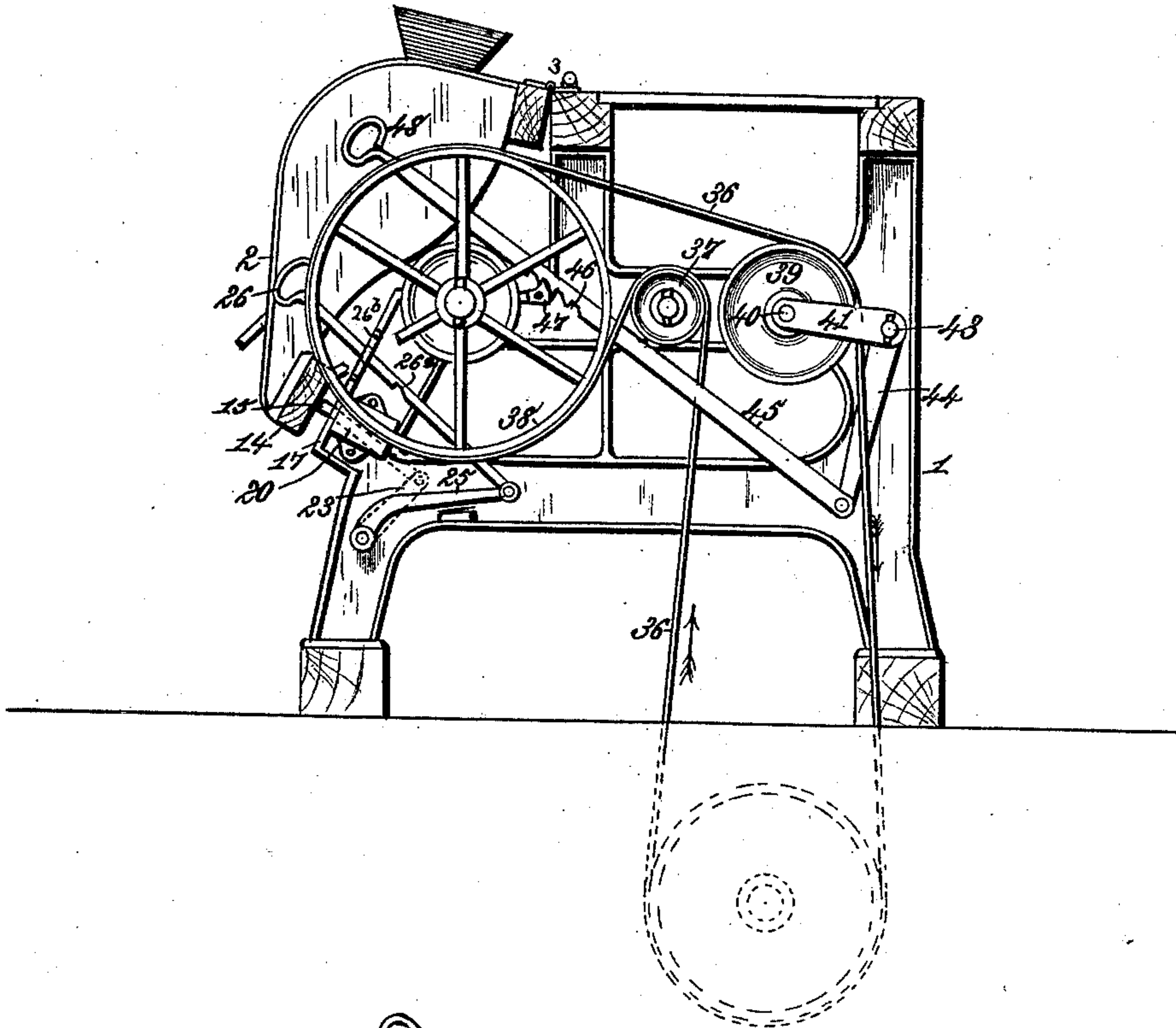


Fig. 2.

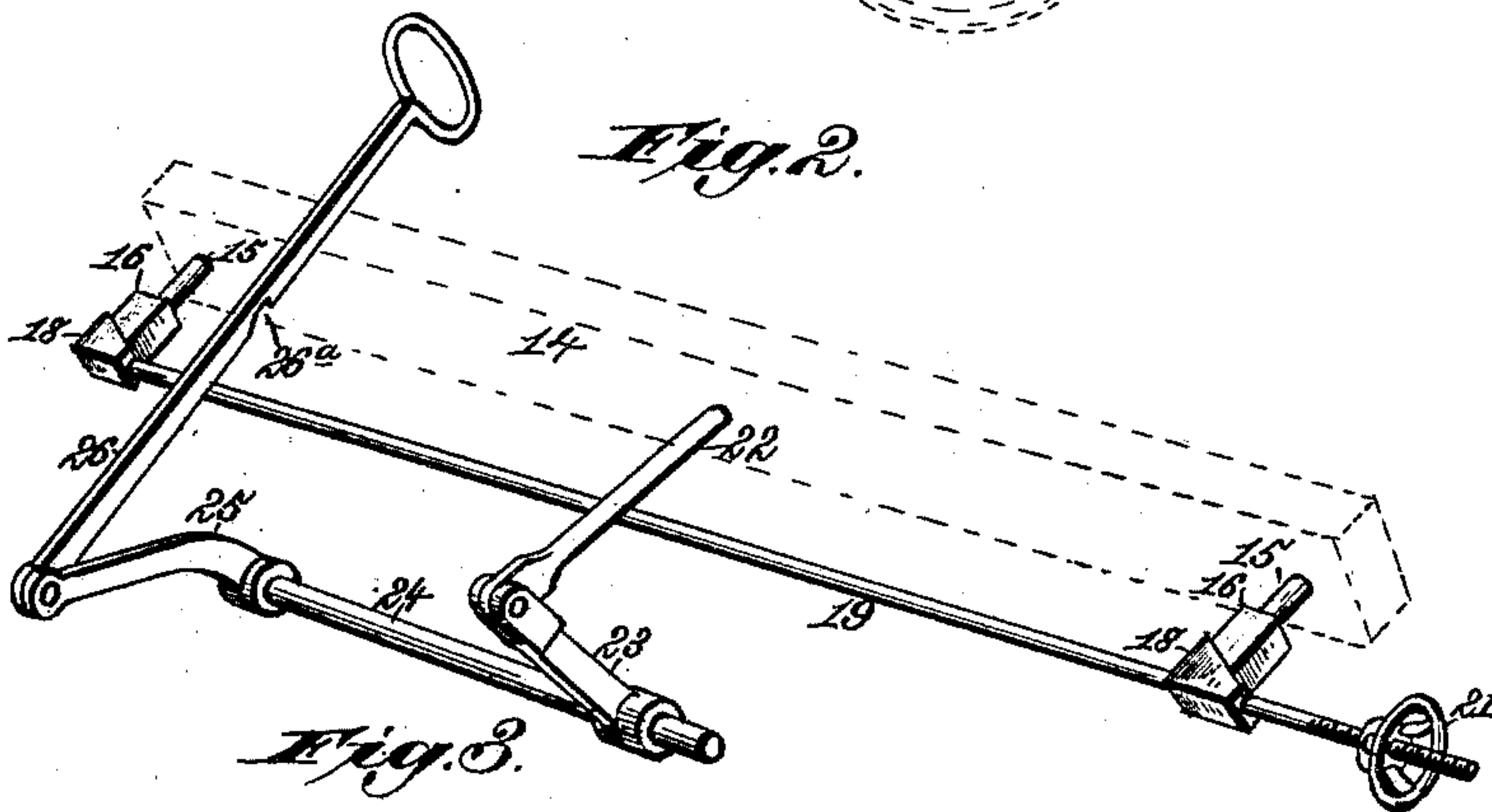
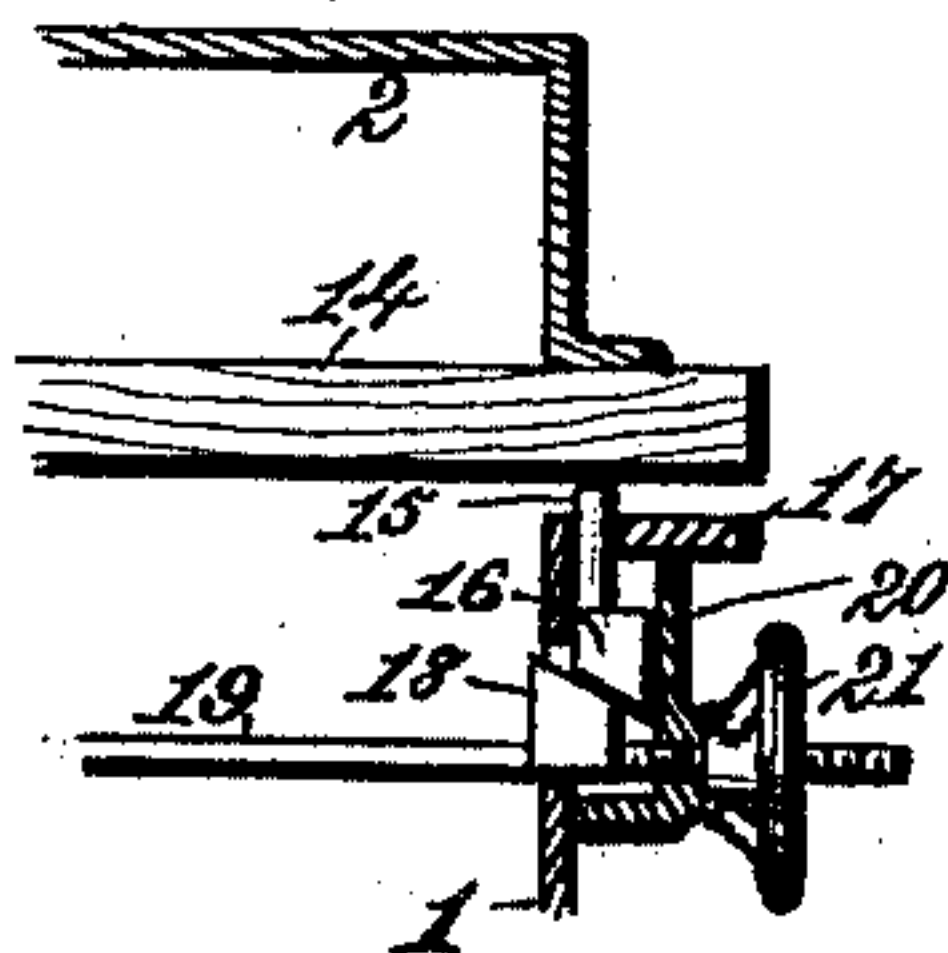


Fig. 3.



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Atty.

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2 Sheets—Sheet 2.

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Fig. 4.

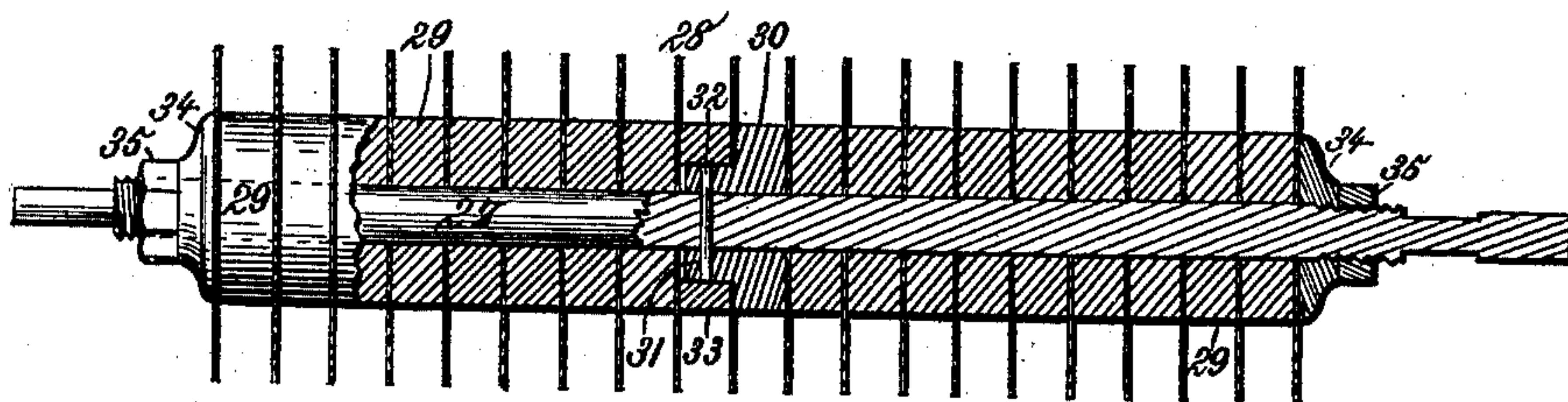


Fig. 5.

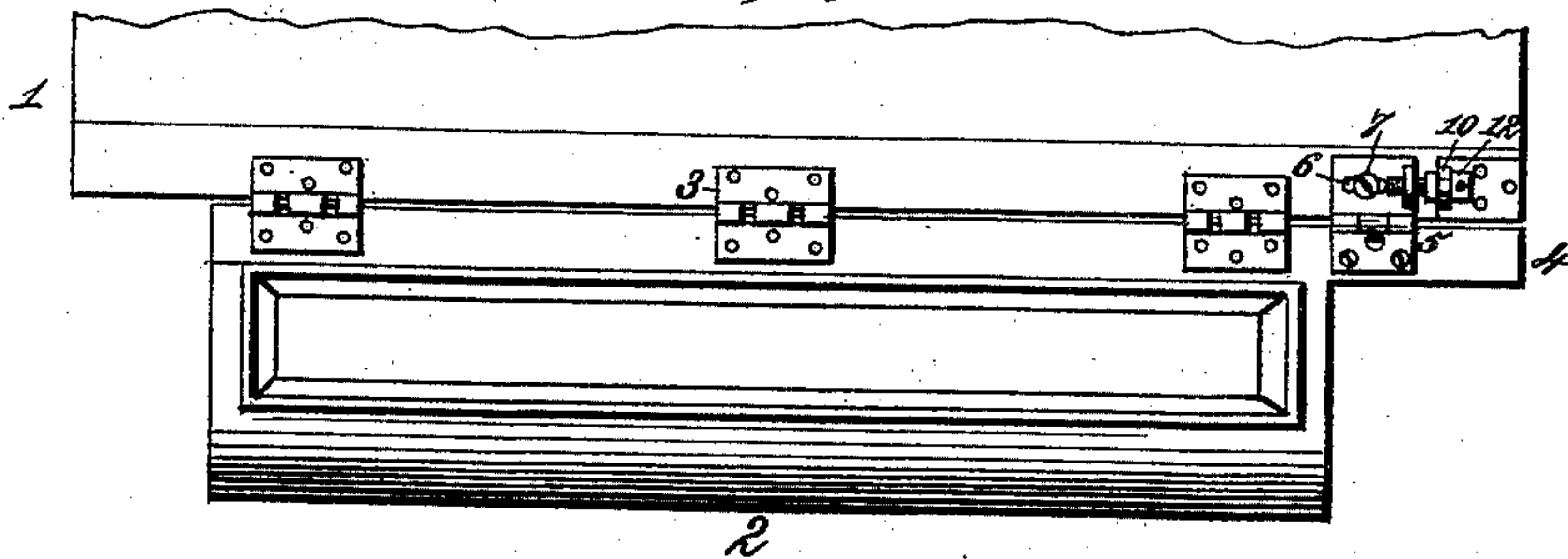


Fig. 6.

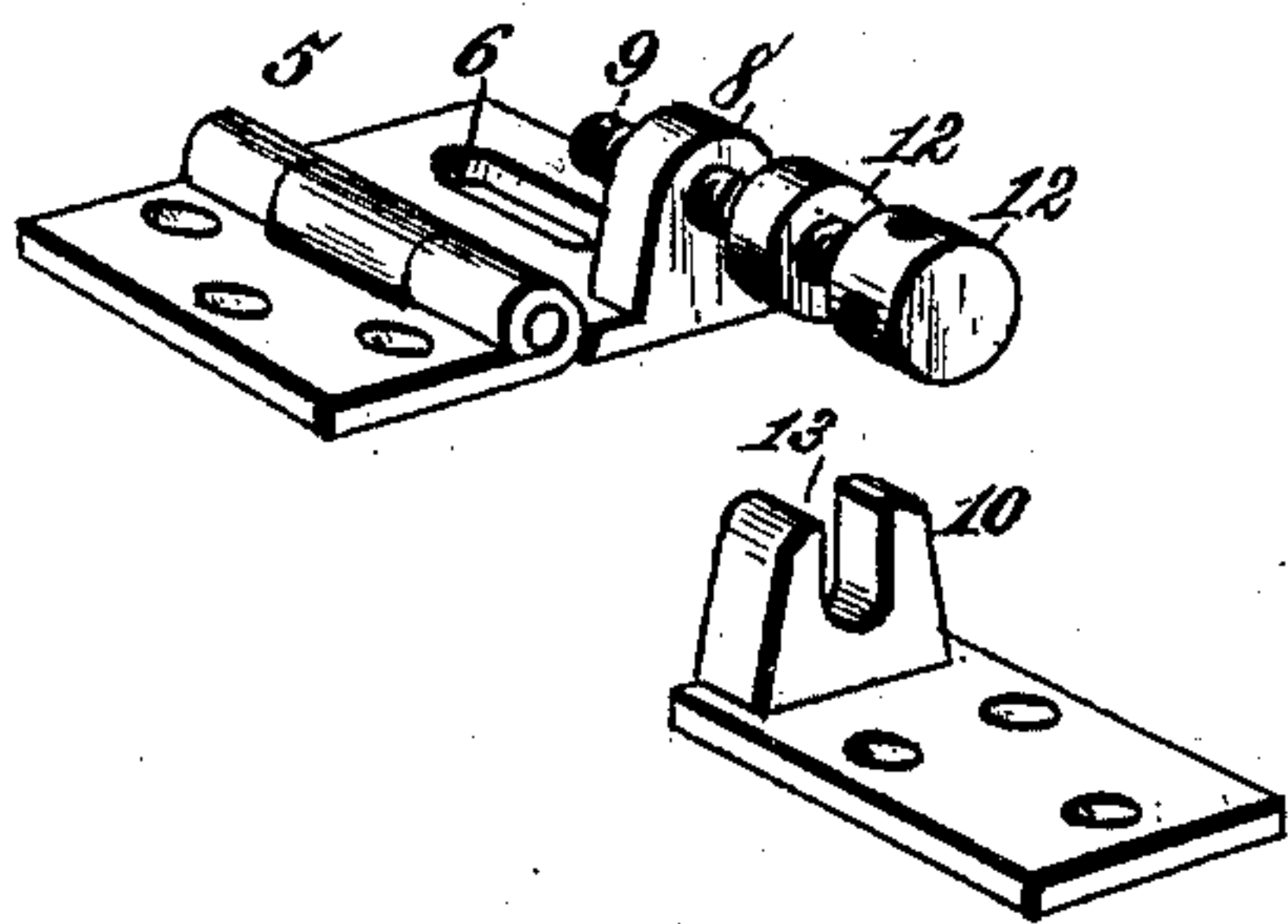
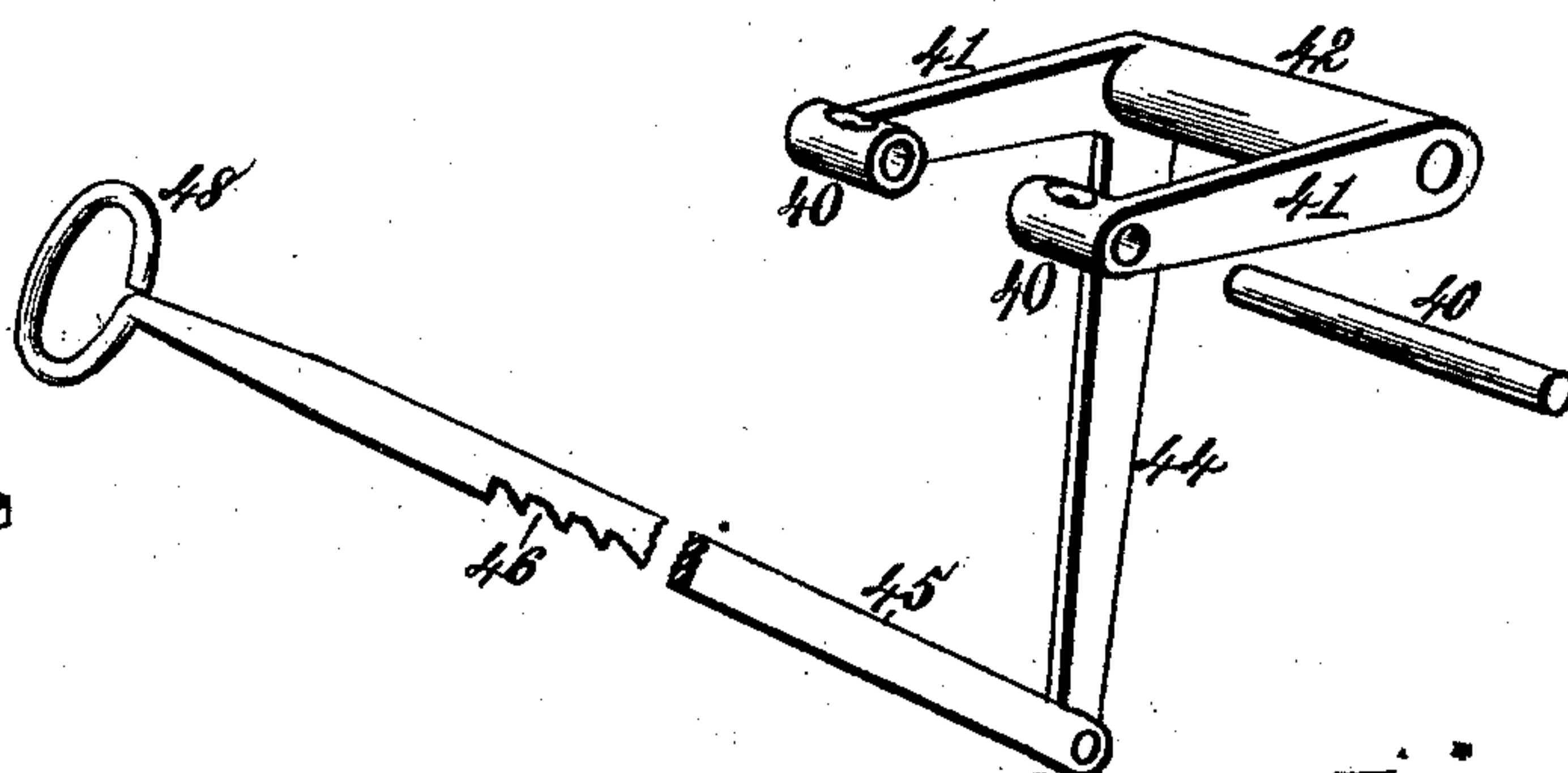


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT S. MUNGER, OF DALLAS, TEXAS.

SAW-GIN.

SPECIFICATION forming part of Letters Patent No. 396,706, dated January 22, 1889.

Application filed June 16, 1888. Serial No. 277,283. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. MUNGER, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Saw-Gins, of which the following is a specification.

My present invention relates to mechanism for ginning cotton, and the purpose thereof is to construct and organize the parts composing a saw-gin in such manner that the several operative parts may all be driven by a single belt, whereby I am able to effect such a saving in space that three gins can ordinarily be set in the space usually required for two, whereby a material economy in the length of the building as well as in the dimensions of the gin-flue and distributor is effected, as well as in the labor necessary in giving proper attention to the several gins under the care of a single operator.

It is my purpose, also, to so arrange the parts of the ginning mechanism that the saw-cylinder shall be driven by a belt which passes from the pulley on said cylinder over a belt-tightening pulley, thence over a pulley on the power-shaft, and then over the pulley on the brush-shaft, from which it passes to the lower surface of the pulley on the saw-cylinder, whereby the power-pulley is interposed between that portion of the belt coming from the saw-cylinder and that part which passes over the brush-pulley, thus nearly, if not entirely, equalizing the tension of said belt upon each pulley and avoiding the heating of the journals or the straining of the belt.

It is my purpose, also, to provide simple means whereby the gin may be easily and instantly stopped without jar.

It is a further purpose of my invention to provide novel means whereby an exact lateral adjustment may be given to the breast in order to give accurate relative position to the ribs and saws. In this respect my invention contemplates means for giving movement to the breast in both directions by a single device, the saw-cylinder having rotary movement only, whereby the heating of the journals and the friction between the saws and ribs, owing to careless or imperfect adjustment, are wholly avoided and injury to

the parts, as well as the danger of fire in the gin from friction between said parts, is entirely obviated.

It is a further purpose of my invention to provide means whereby the breast of the gin may be instantly and readily adjusted vertically or in a plane at right angles with the axles of the saw-cylinder, to enable the saws to extend more or less between the ribs, in order to modify the speed of the ginning process, the cleaning of the seed, and the turning of the roll. It is my purpose to accomplish this result by a single device giving an exact and delicate adjustment and to combine therewith independent means for giving a more extended and instantaneous movement in the same plane to withdraw the saws from the ribs when the gin is stopped.

It is my purpose, also, to provide a novel and simple construction of the saw-cylinder, whereby the saws may be removed from either end, and whereby, also, the entire series of saws is trained from an intermediate fixed point toward both ends, thus avoiding the necessity of resetting the ribs and the expert labor required in adjusting the saws relatively thereto.

To these ends my invention consists in the several novel features of construction and new combinations of parts hereinafter fully described, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is an end elevation of a cotton-gin embodying my invention. Fig. 2 is a detail in perspective of the breast-adjusting mechanism, together with the device for lifting the breast detached from the gin. Fig. 3 is a detail in section showing a portion of the mechanism illustrated in Fig. 2. Fig. 4 is an elevation, partly in section, of the saw-cylinder removed from the gin. Fig. 5 is a plan of part of the gin-frame, showing the breast and the means for giving lateral adjustment thereto. Fig. 6 is a detail in perspective, on an enlarged scale, of the devices for giving lateral adjustment to the breast. Fig. 7 is a detail in perspective showing the bearing for the idle-pulley or belt-tightener with its actuating-lever.

In the said drawings the reference-numeral 1 denotes the frame-work of the gin having a

breast, 2, which is connected to the frame by means of hinges 3, the latter having any ordinary construction, save that a space is allowed between the end bearings on one leaf 5 and the central bearing on the other to permit a limited movement of the latter upon the pintle, as shown in Fig. 5. At one end a projection, 4, is formed upon the breast adjacent to the stationary part of the gin-frame, and the latter is connected to said projection by a hinge, 5, one leaf of which is rigidly secured to the projection 4, while the other is provided with a slot, 6, through which one or more screws, 7, pass into the stationary part 15 of the frame. Upon the slotted leaf is formed a lug, 8, through which is tapped a set-screw, 9, supported by a lug, 10, mounted on the frame of the gin, Fig. 6. A convenient way of mounting this set-screw is to form two collars, 12, thereon, adapted to lie upon each side of the lug 10, which has an open vertical slot, 13. By rotating the set-screw 9, the breast 2 may be given a limited lengthwise lateral adjustment in either direction, the central bearings of the hinges moving upon their pintles between the end bearings of the other leaves. By this construction and arrangement of parts the breast may be adjusted with great accuracy to bring the ribs into true position with relation to the saws.

Upon the under or lower face of the breast is a breast block or plate, 14. The breast-block 14 rests on adjustable supports composed of pins which have cylindrical portions 15 and square or rectangular portions 16. The round portions 15 are inserted in apertures in the gin-frame, the outwardly-flanged ribs 17 affording convenient bearings for this purpose, and the pins are inclined at an angle, as shown in Fig. 1, to enable the breast-block 14 to bear directly against their ends. The ends of the squared portions 16 are beveled off at an angle and engage with cam-blocks 18, having an equal but opposite bevel, and carried by a rod, 19, parallel to and co-extensive with the breast-block. This rod is supported in the frame in such manner as to permit longitudinal adjustment, and for this purpose I may form a housing, 20, over one of the pins and project the end of the rod through said housing to permit a set-nut, 21, to engage with a threaded portion of the rod. This nut bears against the housing as it is turned up and draws the blocks 18 against the beveled heads 16, thereby forcing the pins 15 against the breast-block and raising the breast. By this arrangement an exact vertical adjustment of the ribs relatively to the saws can be easily effected for the purpose of allowing the saws to extend to a greater or less degree within the ribs to control the speed of the ginning process, the cleaning of the seed, and the turning of the roll. When the set-nut 21 is turned back to drop the breast, the weight of the parts will project the rod 19 longitudinally and push back the pins 15.

In order to raise the breast, as is necessary

when the gin is stopped, a push-bar, 22, is arranged at or near the middle portion of the breast-block 14, against which its end abuts. This bar is pivotally connected to an arm, 23, carried by a rock-shaft, 24, journaled in the supporting portions of the frame, and having at its end a rigid arm, 25, to which a hand-bar, 26, is pivotally connected. This bar lies beside one end of the gin, where it may be readily grasped and drawn upward and outward, operating the rock-shaft, projecting the push-bar 22 against the breast-block, and raising the breast. A notch, 26^a, is formed in the bar and engages an edge or detent, 26^b, on the frame to hold the breast in its raised position.

The saw-cylinder is composed of a shaft, 27, upon which the saws 28 are arranged at equal intervals and separated by space-blocks 29, formed of wood or other suitable material. At or near the central portion of the shaft is an iron collar, 30, having a thickness equal to that of the space-blocks and provided with a hub or diminished portion, 31, connected to the shaft by a pin, 32. Upon this hub is placed a saw having an aperture of suitable size, and a space-ring, 33, is then slipped upon the hub 31. The saws and space-blocks are then placed upon the shaft from both ends, an outer collar, 34, being placed against the outer saw at each end, and nuts 35 are then turned on the threaded ends of the shaft. By this construction the series of saws are blocked up from both ends toward an intermediate fixed point, whereby the compression of the space-blocks is rendered more nearly uniform throughout the series, and in removing and replacing the saws they will be accurately trained and adjusted with relation to the ribs without the necessity of resetting the ribs. Moreover, in replacing a broken or worn-out saw it is important to be able to remove the same from either end of the shaft.

I arrange the gearing of the gin substantially as shown in Fig. 1, the saw-cylinder and brush being driven by a single belt, 36. This belt passes from a power-pulley, 60, below over the pulley 37 of the brush-shaft, thence around the pulley 38 of the saw-cylinder, and thence over an idle-pulley, 39, back to the power-pulley. The idle-pulley is journaled in bearings 40 in two parallel arms, 41, connected together by a sleeve, 42, which is mounted upon a stud, 43, projecting from the frame.

Mounted upon the end of the sleeve 42 is an arm, 44, to the end of which is connected a bar, 45, which is provided with notches 46, engaging with a detent, 47. This bar is provided with a handle, 48, lying beside the end of the gin near the breast, whereby the operator can instantaneously stop or start the mechanism by simply lowering or raising the idle-pulley, and thus relaxing or tightening the belt. By this arrangement the power-pulley is interposed between that portion of the belt coming from the saw-cylinder and that portion passing over the brush-pulley, so

that downward pull on the part of the belt running over the brush-pulley is relieved, and the tension of the belt on the several pulleys is nearly, if not entirely, equalized and the heating of the journals and straining of the belt lessened. By this arrangement I am able to effect a material economy of space and reduce the mechanism required for the operation of the gin, whereby a greater number of gins can be operated within a given space and with no additional labor, since the operator is not required to walk as far in attending the machines.

It will be seen that by my method of giving lateral adjustment to the breast the adjusting devices are always in engagement, and cannot be disturbed, displaced, or interfered with by the raising of the breast.

What I claim is—

1. The combination, with a gin-frame, of the saw-carrying shaft having a pulley, 38, an idle-pulley, 39, pivoted swinging arms 41, connected and carrying the idle-pulley, a pendent arm, 44, connected to one of the pivoted arms, a bar, 45, connected to the lower end of the pendent arm, and having a handle, 48, for swinging the pivoted arms, a detent for said bar, a power-pulley, a brush-shaft pulley, 37, located between the saw-shaft and the idle-pulley, and a single belt passing from the power-pulley over the idle and brush-shaft pulleys and about the saw-shaft pulley, substantially as described.

2. The combination, with a gin-frame and a lengthwise-adjustable breast hinged thereto, of a hinge composed of two plates, one movably secured to the gin-frame and the other fixed to the breast, and a set-screw mounted on the gin-frame and engaging the movable plate of said hinge to adjust the breast lengthwise, substantially as described.

3. The combination, with a gin-frame and a lengthwise-adjustable breast, of hinges each composed of two parts, one movable laterally with respect to the other and secured, respectively, to the gin-frame and breast, a hinge composed of two plates, one movably secured to the gin-frame and the other fixed to the breast, a lug on the gin-frame, and a set-screw carried by the lug and engaging a part of the said movable plate of the hinge, substantially as described.

4. The combination, with a gin-frame and a lengthwise-movable breast hinged thereto, of a hinge composed of two plates, one slotted

and movably secured to the gin-frame and having a vertical lug and a lug fixed to the gin-frame, a set-screw swiveled to the lug on the gin-frame and screw-threaded into the lug on the movable plate of the hinge, substantially as described.

5. In a cotton-gin, the saw-cylinder consisting of a shaft having both ends screw-threaded, saws on the shafts, spacing-blocks between the saws, one of which is rigidly secured to the shaft at or adjacent to the middle of its length, and a nut at each end of the shaft, substantially as described.

6. In a cotton-gin, the combination, with a shaft, of a space-block rigidly connected thereto at or near its center, alternating saws and space-blocks arranged in a series upon each side of the rigid block, collars placed upon the ends of the shaft, and nuts turned upon said ends and resting against the collars, substantially as described.

7. In a cotton-gin, the combination, with the gin-frame, of a breast having a hinge-connection with the gin-frame, pins projecting through the gin-frame and supporting the hinged breast, said pins having beveled heads, a rod carrying oppositely-beveled blocks engaging the beveled heads of said pins, and means for giving longitudinal adjustment to said rod to project the supporting-pins outward, substantially as described.

8. In a cotton-gin, the combination, with a gin-frame and a breast having hinge-connections with the gin-frame, of pins projecting through the gin-frame and supporting the breast upon their ends, a rod arranged in parallelism with the breast and carrying beveled blocks engaging oppositely-beveled heads upon the supporting-pins, a set-nut turned upon the threaded end of said rod, and a housing inclosing one of the supporting-pins, substantially as described.

9. In a cotton-gin, the combination, with the gin-frame, of a breast hinged to the gin-frame, a longitudinally-movable rod arranged behind said breast and carrying cam-blocks engaging with adjustable supports for said breast, and means for giving longitudinal movement to said rod, substantially as described.

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

R. S. MUNGER.

Witnesses:

H. H. HOWARD,
W. H. CLARKE.