

(No Model.)

2 Sheets—Sheet 1.

S. ENGLISH.
MACHINE FOR SAWING SHINGLES.

No. 470,996.

Patented Mar. 15, 1892.

Fig. 1.

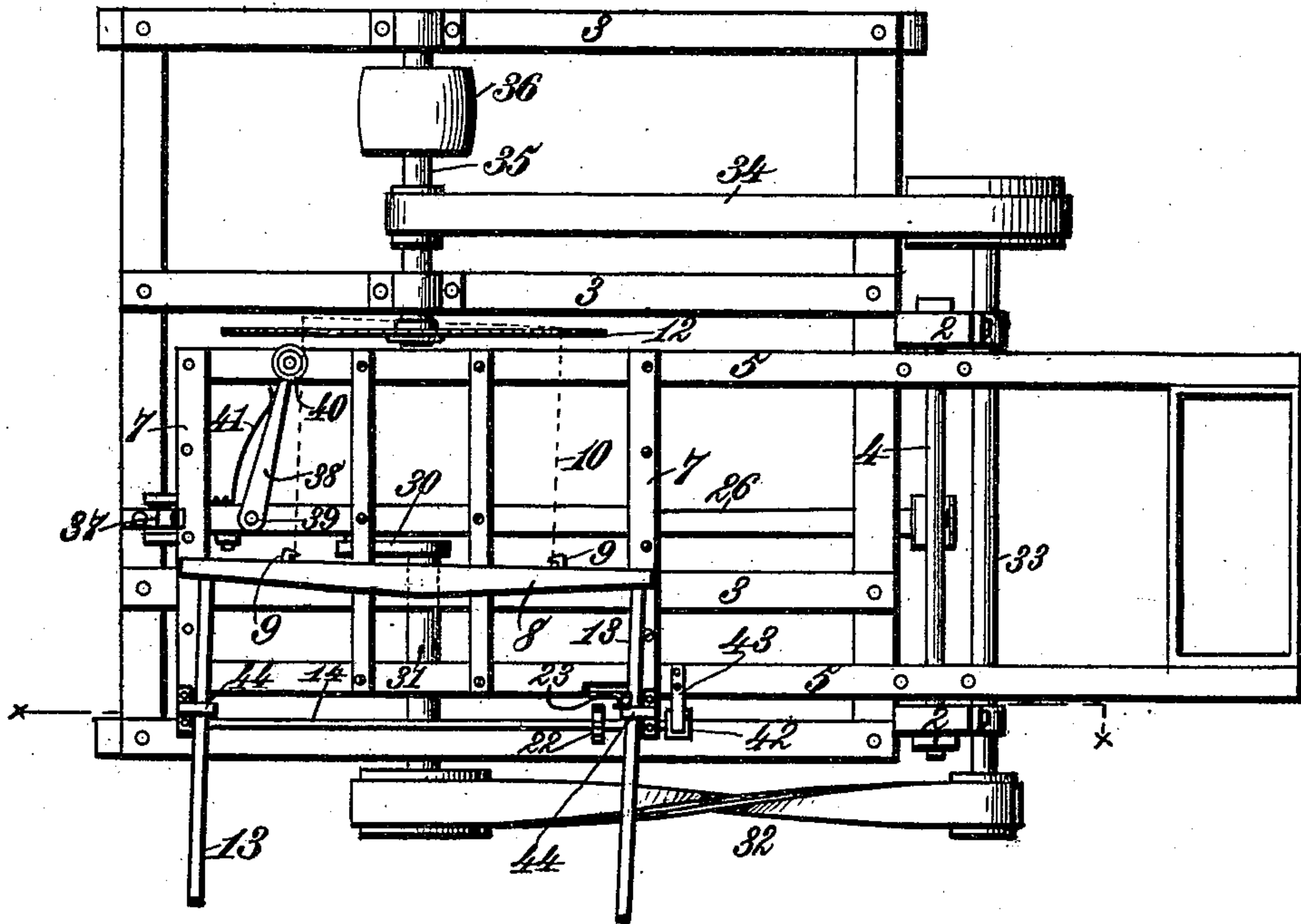
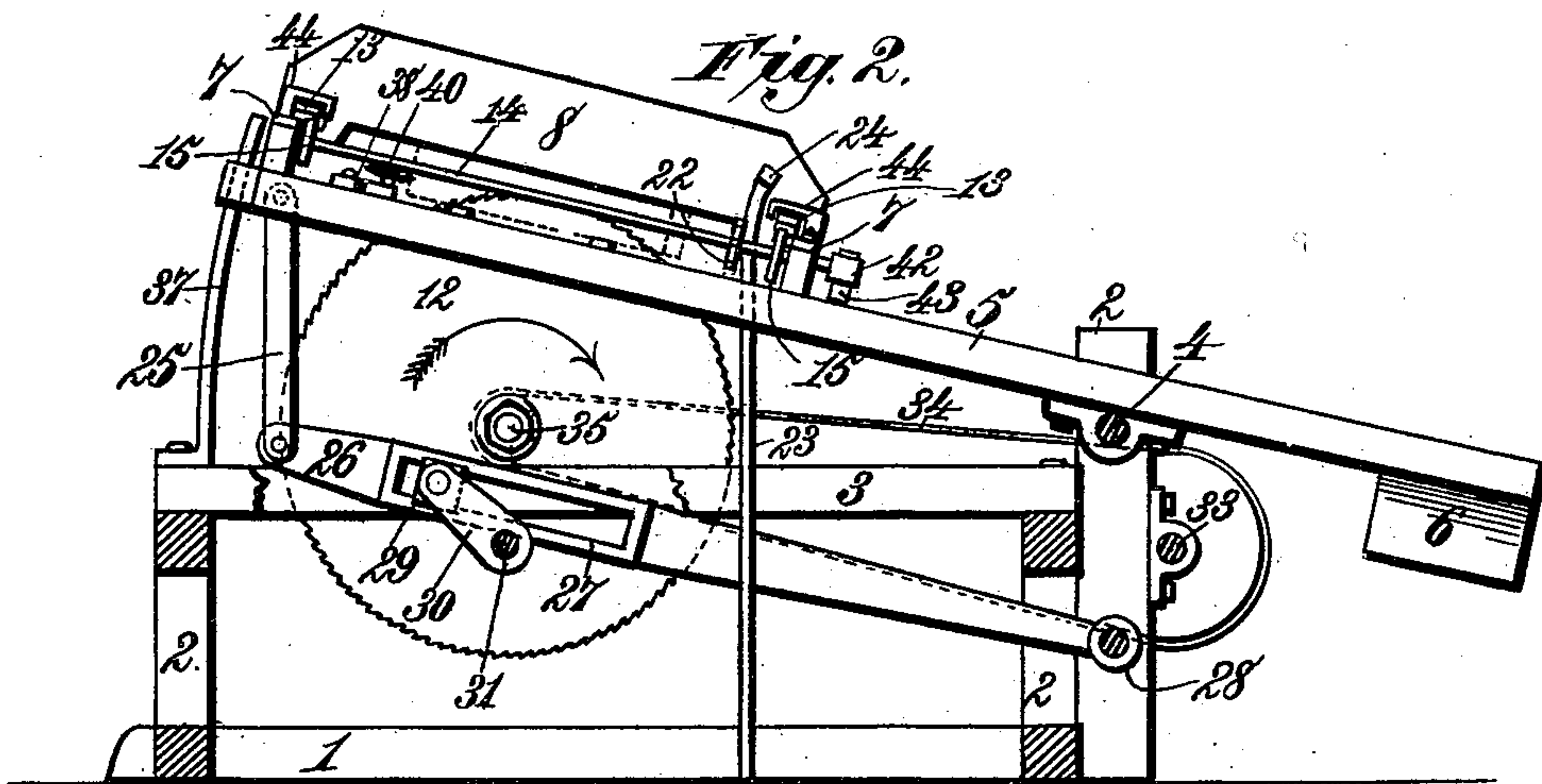


Fig. 2.



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Fig. 3.

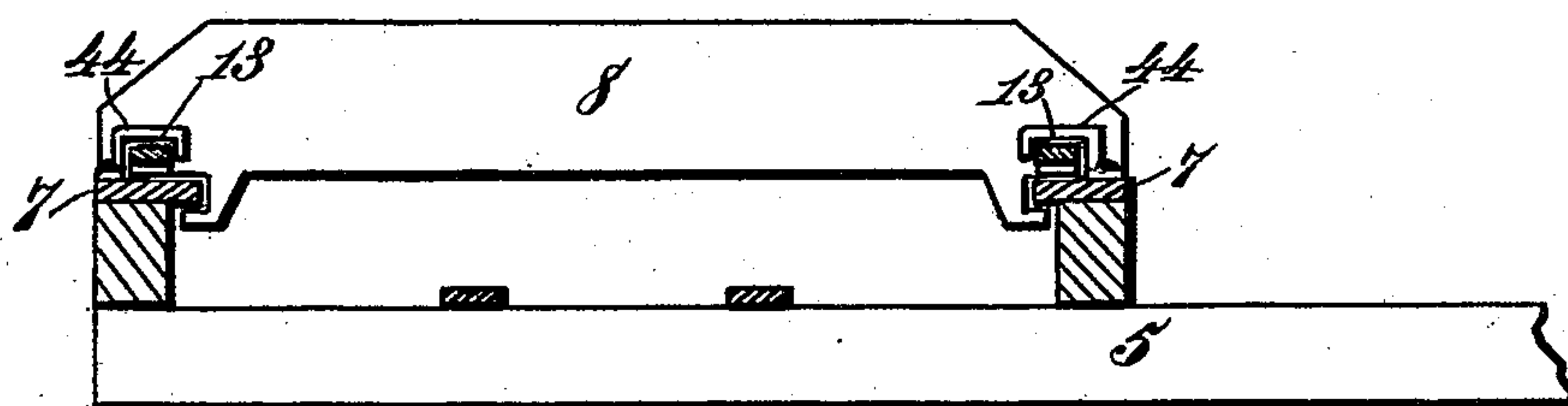


Fig. 4.

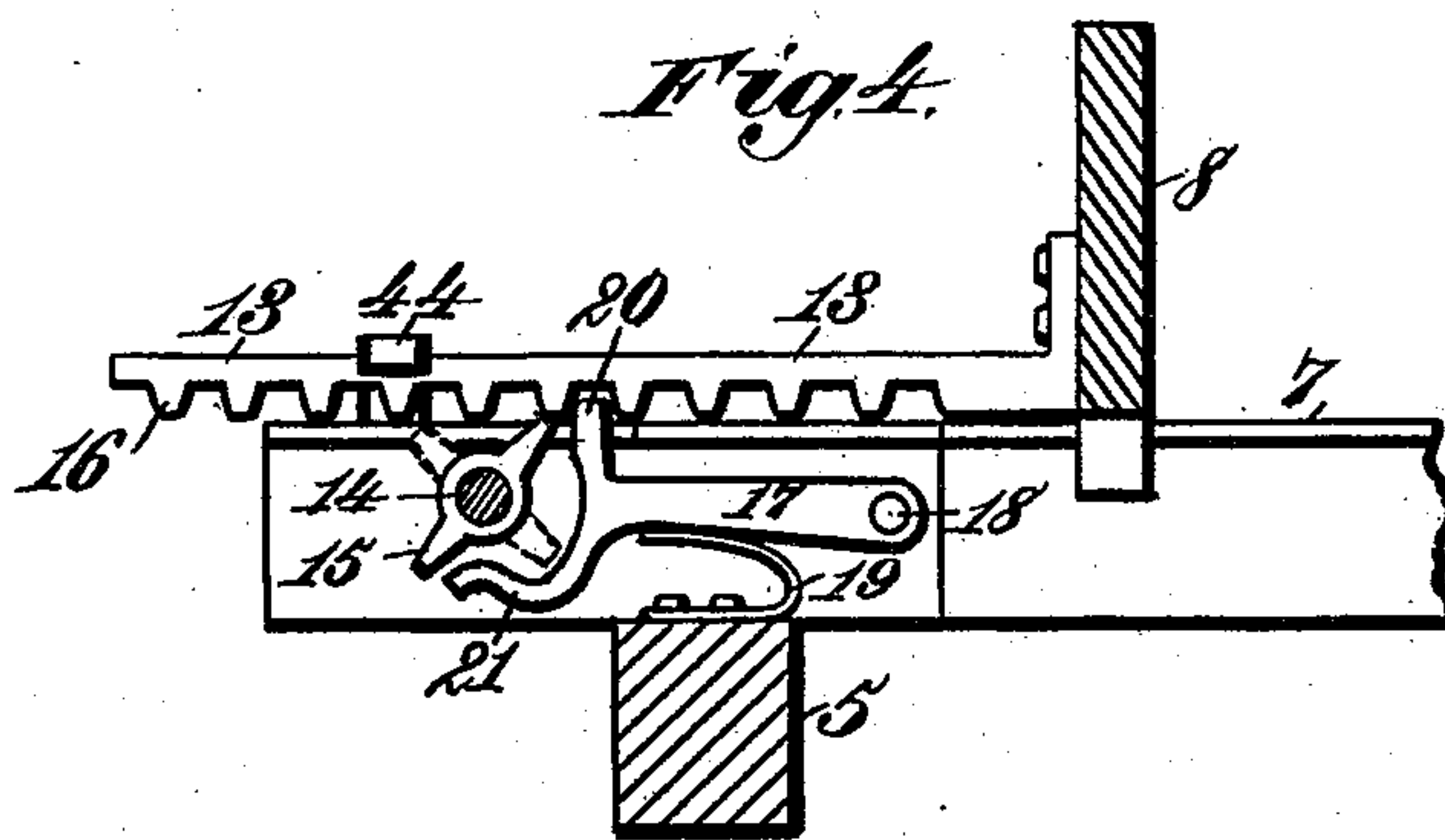
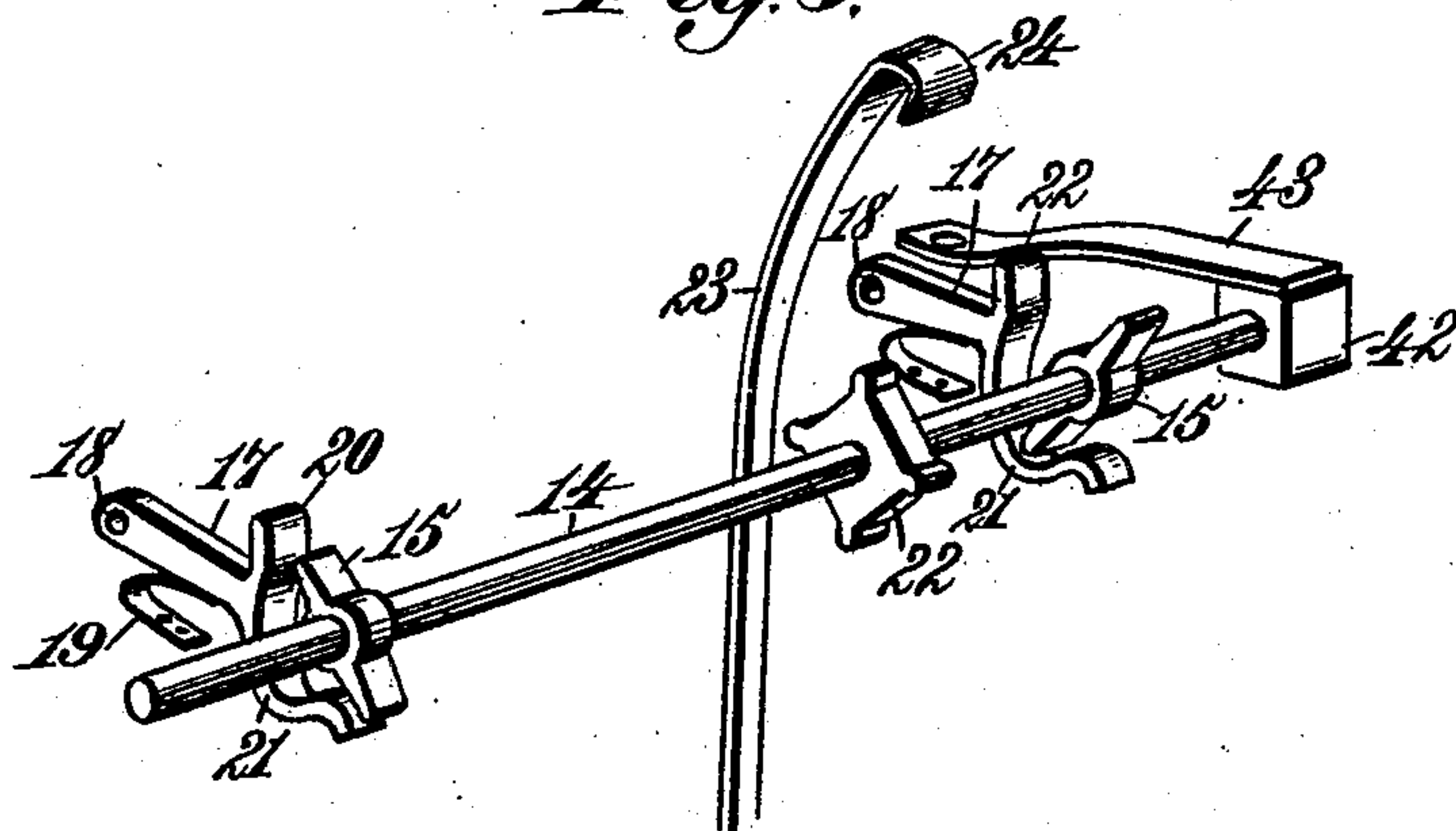


Fig. 5.



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UNITED STATES PATENT OFFICE.

SOLON ENGLISH, OF KINZUA, PENNSYLVANIA.

MACHINE FOR SAWING SHINGLES.

SPECIFICATION forming part of Letters Patent No. 470,996, dated March 15, 1892.

Application filed August 12, 1891. Serial No. 402,448. (No model.)

To all whom it may concern:

Be it known that I, SOLON ENGLISH, a citizen of the United States, residing at Kinzua, in the county of Warren and State of Pennsylvania, have invented new and useful Improvements in Machines for Sawing Shingles, of which the following is a specification.

This invention has for its objects to provide a new and improved machine for producing shingles; to facilitate the manufacture of shingles by increasing the rapidity of the cutting action, and consequently rendering the machine susceptible of producing a greater number of shingles in a given time; to avoid binding of the shingle-bolt on the circular saw; to simplify the machine, and to render it more efficient in operation.

To accomplish all these objects my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of a shingle-machine embodying my invention. Fig. 2 is a sectional view taken on the line *x x*, Fig. 1. Fig. 3 is a detail sectional view showing portions of the oscillatory table and the bolt-dogging and feeding devices. Fig. 4 is a detail sectional view showing the tumbling-shaft, one of the rack-bars, and one of the pawls for locking the rack-bar against back motion; and Fig. 5 is a detail perspective view of the tumbling-shaft, the locking-pawls, and the hooked arm for actuating the tumbling-shaft.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates the base portion of a frame-work, comprising uprights or standards 2 and horizontal beams 3. At one end of this frame-work is arranged a horizontal shaft 4, on which is mounted an oscillatory table 5, having at its outer extremity a counterbalance-weight 6 and at its inner end portion provided with a pair of parallel guides 7, with which engage the end portions of a head-block 8, having dogs 9 of any ordinary construction to engage one end of a shingle-bolt 10, which is to be presented to the action of a circular saw 12 for the purpose of cut-

ting the bolt into shingles. A pair of sliding bars 13 are arranged to move on the upper sides of the guides 7 and are bolted or otherwise directly attached at one extremity to the head-block 8, Fig. 4, so that if the bars are intermittently advanced the shingle-bolt is fed transversely across the table and is alternately shifted laterally for the purpose of cutting the shingle's points and butts.

The oscillatory table is mounted intermediate its ends upon the horizontal shaft 4, and the inner side edge of the table is arranged in such relation to the saw that the table can move down past the saw in a plane parallel with the vertical plane in which the saw rotates, so that each time the inner end portion of the table is caused to descend the circular saw operates on the shingle-bolt to sever a shingle therefrom. The inner end portion of the oscillatory table is provided with bearings, in which is journaled a tumbling-shaft 14, having a pair of duplex arms or cams 15, arranged out of coincidence and adapted to engage rack-teeth 16, provided at the under sides of the sliding bars 13 in such manner that if the tumbling-shaft is intermittently rotated the duplex arms or cams 15 will alternately act on the rack-bars to advance the same, and thereby move first one end and then the opposite end of the head-block 8 for the purpose of alternately shifting the shingle-bolt 10 in a lateral direction. A pair of pawls 17 are pivoted at 18 to the oscillatory table and are adapted to alternately engage the rack-bars for locking them against back motion. The locking-pawls are arranged, respectively, in such relation to the duplex arms or cams 15 that the latter serve to alternately depress the cams and free them from engagement with the rack-bars, while the pawls are restored to their locking position by suitable springs 19. The locking-pawls each comprise an upwardly-projecting tooth 20 to engage a rack-bar and a downwardly-projecting curved arm 21 to be acted on by a duplex arm or cam 15, so that a pawl will be depressed at each movement of the tumbling-shaft to release the rack-bar co-operating with such pawl and enable such rack-bar to be advanced by a cam 15. The tumbling-shaft is provided with a cam-wheel 22, arranged in such relation to an upright stationary arm 23,

having a hooked upper end portion 24, that each time the oscillatory table rises at its inner end portion the hook 24 of the arm 23 imparts a quarter-revolution to the tumbling-shaft 14, thereby releasing one of the pawls 20 and advancing the rack-bar with which such pawl co-operates, while the other pawl will be in engagement with its rack-bar to hold the latter from back motion. By this means the end portions of the head-block are alternately advanced, so that the shingle-bolt is not only fed toward the circular saw, but is intermittently shifted in a lateral direction to so present the bolt to the saw that at each descent of the inner end portion of the oscillatory table the bolt is properly presented to the saw for the production of the ordinary tapering shingle.

The bolt-carrying table is automatically oscillated in a vertical plane through the medium of a link 25, pivoted at one extremity to the table and at the opposite extremity to one end of a lever 26, having a yoke-shaped frame 27, and pivoted at its opposite extremity 28 to one of the uprights or standards 2 of the frame-work of the machine. The lever 26 is vibrated by a slide 29, moving in the yoke-shaped frame 27 and pivoted to the crank-arm 30 of a driven shaft 31 in such manner that as the shaft revolves it vibrates the lever in a vertical plane, and thereby imparts a corresponding motion to the oscillatory table. The driven shaft 31 is connected by a belt 32 or otherwise with a counter-shaft 33, having a belt or other suitable connection 34 with the circular-saw arbor 35. The saw-arbor is provided with a driving-pulley 36, operated by any suitable motor for the purpose of rotating the circular saw and at the same time transmitting rotary motion to the crank-shaft which oscillates the bolt-carrying table. The inner end portion of the oscillatory table is preferably guided by a vertically-projecting guide arm or bar 37 for the purpose of avoiding any liability of the table moving laterally with reference to the vertical face of the circular saw.

For the purpose of holding the shingle-bolt down upon the oscillatory table when the latter descends to present the bolt to the action of the circular saw I provide a swinging arm 38, pivoted at one end 39 to a part of the oscillatory table and having at its opposite extremity a rotary disk 40, adapted to penetrate and engage one side of the shingle-bolt, so that the latter can be advanced and shifted laterally, while at the same time it will be held down upon the table as the latter descends. The pivoted arm or bar 38 is acted upon by a spring 41, which tends to constantly press the disk 40 into engagement with the shingle-bolt.

The tumbling-shaft is so constructed and arranged that its turning motion is stopped at the proper instant after it has been turned by the action of the hook 24 of the arm 23, and while this can be accomplished in any

manner suitable for the conditions required I have exhibited in Fig. 5 a simple contrivance for attaining the result stated. This contrivance is composed of a square block 42, fixed on the tumbling-shaft and pressed upon by a leaf-spring 43, so that each time a flat face of the block is presented to the leaf-spring further turning motion of the tumbling-block is prevented.

Inasmuch as the counterbalanced table can be rapidly oscillated, the machine is rendered susceptible of producing shingles with great facility and more rapidly than where a bolt-carrying table rises and falls in a vertical plane between perpendicular standards or uprights.

I do not deem it necessary to illustrate means for adjusting or operating the dogs 9 of the head-block 8, as this may be accomplished in any ordinary manner.

The circular saw rotates in the direction of the arrow, Fig. 2, and since the inner end portion of the table moves vertically in the arc of a circle the shingle-bolt is moved upon the saw faster at the point where the saw-teeth enter than where they leave the bolt to avoid choking of the saw, so that steady action is secured and binding is prevented.

The rack-bars may be confined in proper working position by any devices suitable for the conditions required.

In the drawings I exhibit hook-shaped guides 44, secured to the guides for the head-block and extending over the rack-bars.

Having thus described my invention, what I claim is—

1. The combination of a stationary framework, a circular saw, a vertically-oscillating bolt-carrying table pivoted intermediate its ends to the frame-work and having a counterbalance-weight directly attached to one end thereof, a movable head-block carried by the oscillating table and having a pair of attached rack-bars, a pair of locking-pawls pivoted to the oscillating table for locking the racks against back motion, a tumbling-shaft journaled in the oscillating table and having arms or cams and a cam-wheel, an upright stationary arm attached to the frame-work and provided at its upper end with an overhanging hook to actuate the cam-wheel as the inner end portion of the oscillating table rises in the arc of a circle, a vibrating lever pivoted at one end to the frame-work below the oscillating table and provided at its opposite end portion with a yoke and a link which connects with the table, and a driven shaft having a crank engaging the yoke for oscillating the table in a vertical plane, substantially as described.

2. The combination, in a machine for making shingles, of a circular saw rotating in a vertical plane, a pivoted counterbalanced table oscillating in a vertical plane at one side of the saw and provided with a pair of intermittently-movable rack-bars having a head-block for engaging a shingle-bolt, a pair of

locking-pawls pivoted to the oscillatory table for locking the rack-bars against back motion, a tumbling-shaft journaled in the oscillatory table and having duplex arms or cams and a cam-wheel, and a stationary arm rigidly secured to the frame of the machine and having at its upper end an overhanging hook, which acts on the cam-wheel to turn the tumbling-shaft as the inner end portion of the oscillatory table rises in the arc of a circle, substantially as described.

3. The combination, in a machine for making shingles, of a circular saw rotating in a vertical plane, a pivoted counterbalanced table oscillating in a vertical plane at one side of the saw and provided with bolt shifting and feeding mechanism for intermittently shifting and advancing the bolt across the table toward the saw, a vibrating lever pivoted at one end to the frame of the machine at a point below the pivot of the oscillating table and provided at its opposite end portion with a yoke and a link connection with the table, and a driven shaft having a crank in sliding engagement with the yoke-shaped frame for oscillating the table, substantially as described.

4. The combination of a stationary frame-work, a circular saw mounted thereupon to rotate in a vertical plane, a vertically-oscillating table pivoted intermediate its ends to the frame-work, provided at one end with an attached counterbalance-weight and having on its opposite end portion a head-block and alternately-operating shifting devices for alternately shifting the opposite ends of the head-block toward the saw, a vibrating lever pivoted at one end to the frame-work at a point beneath the oscillating table and having at its opposite end portion a yoke-frame and a link which connects with the table, a driven shaft having a crank engaging the yoke for oscillating the table in a vertical plane, and means for operating the shifting devices which shift the opposite ends of the head-block toward the saw, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

SOLON ENGLISH. [L. s.]

Witnesses:

ALBERT H. NORRIS,
JAMES A. RUTHERFORD.