

(No Model.)

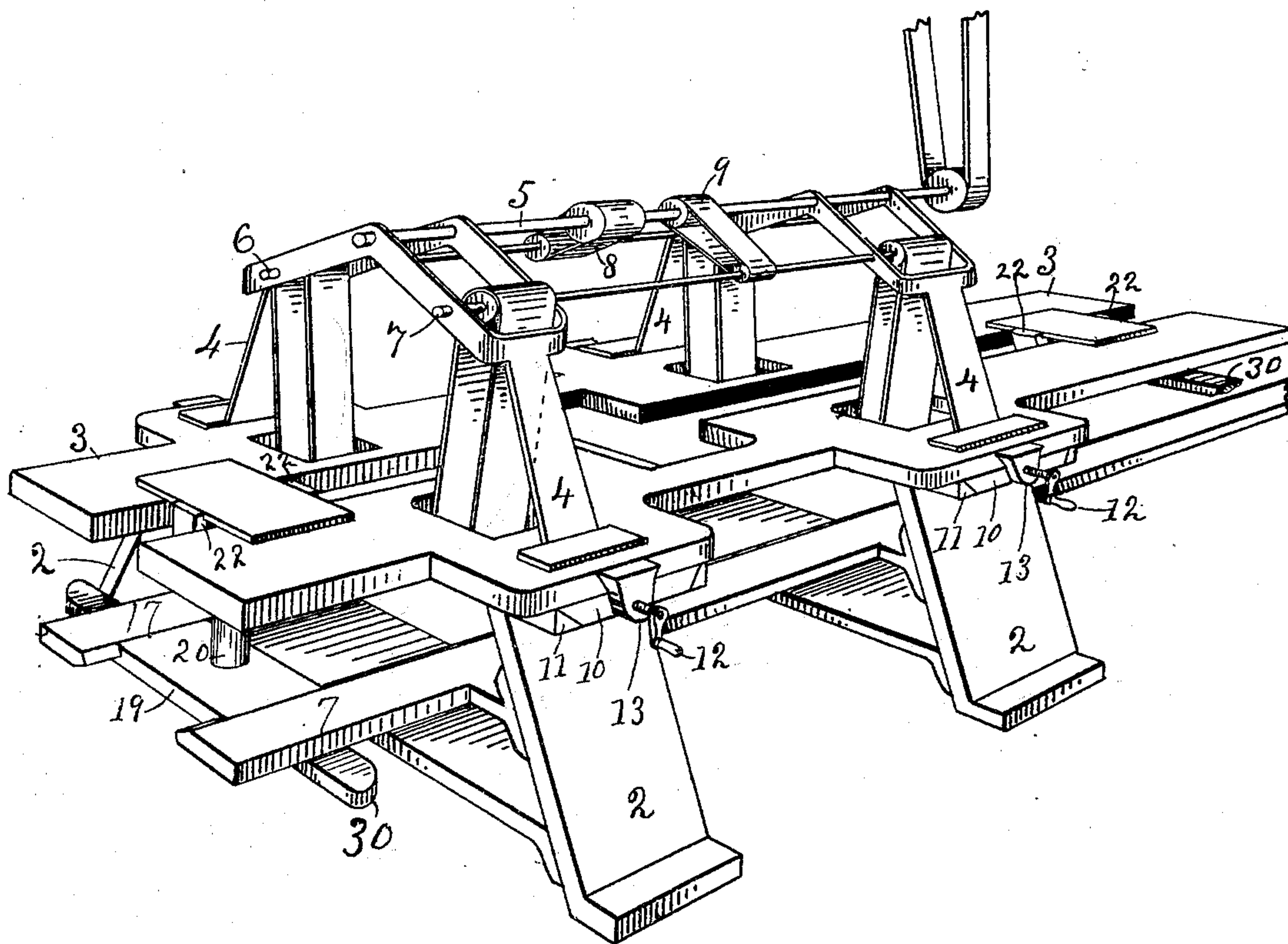
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I. BROOME.
TILE DRESSING MACHINE.

No. 509,868.

Patented Dec. 5, 1893.

Fig. I.



WITNESSES

Thos. Houghton.
Edwin Guthrie

INVENTOR

Isaac Broome,
By McFarland & Benjamin
His Attorneys

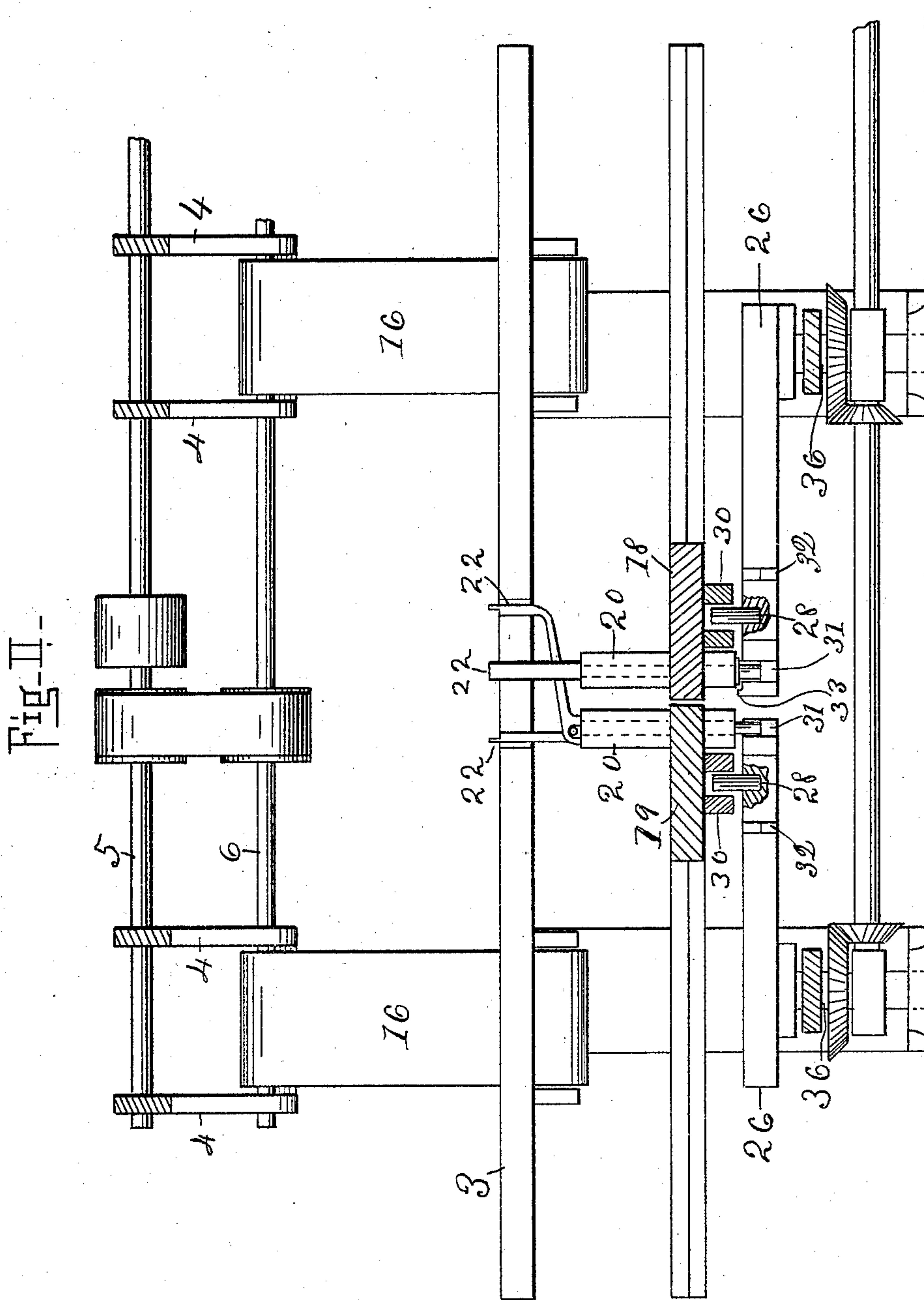
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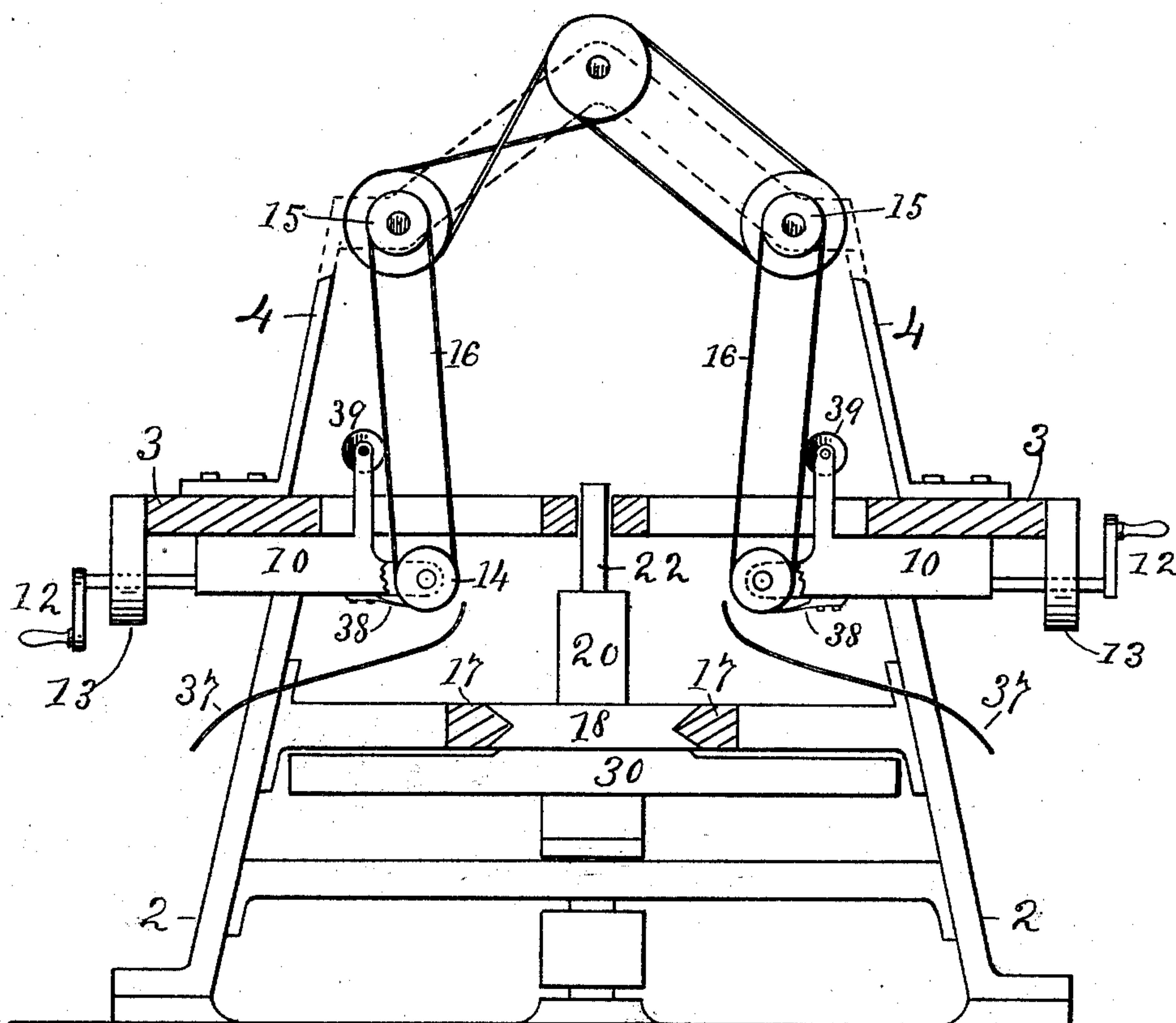
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Fig. III—



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Edwin Guthrie

INVENTOR

Isaac Broome,
By McFarland & Benjamin
His Attorneys.

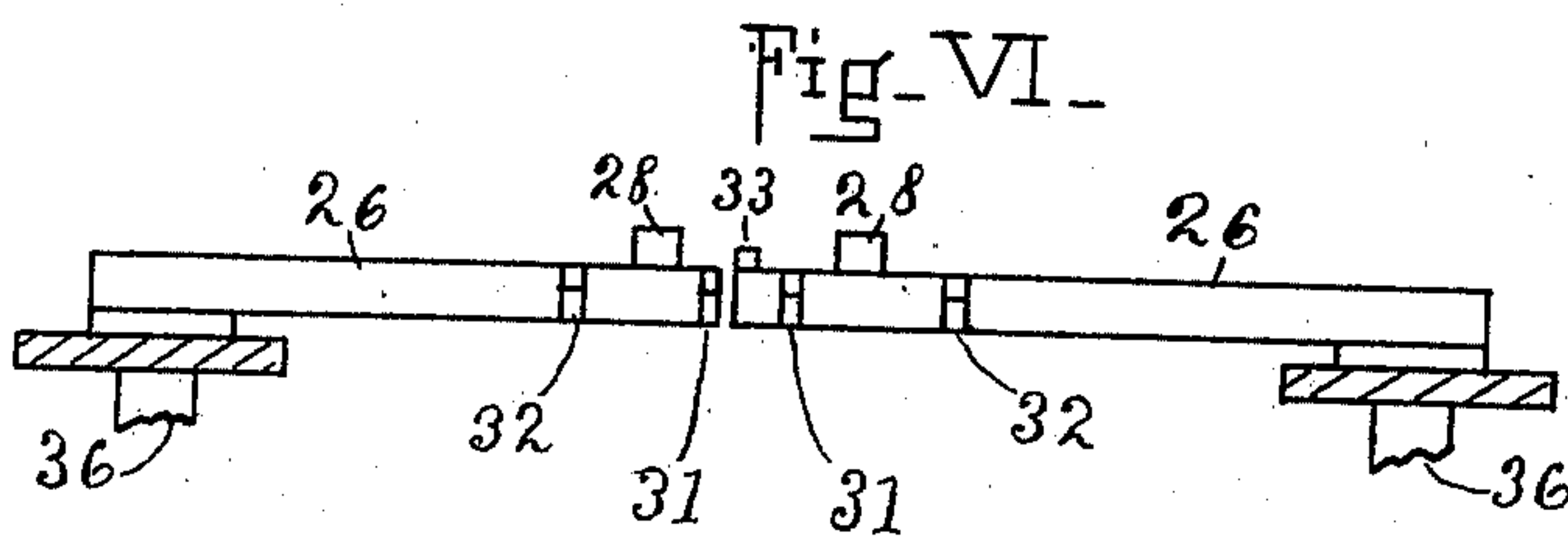
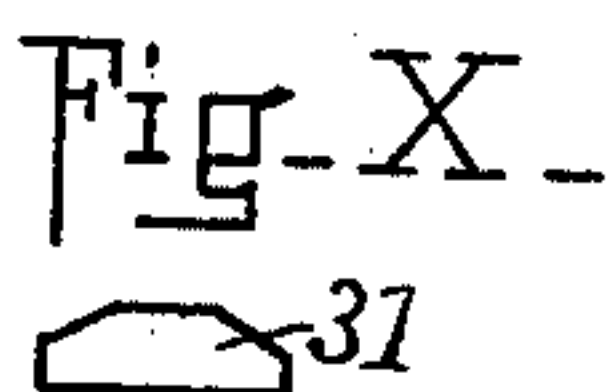
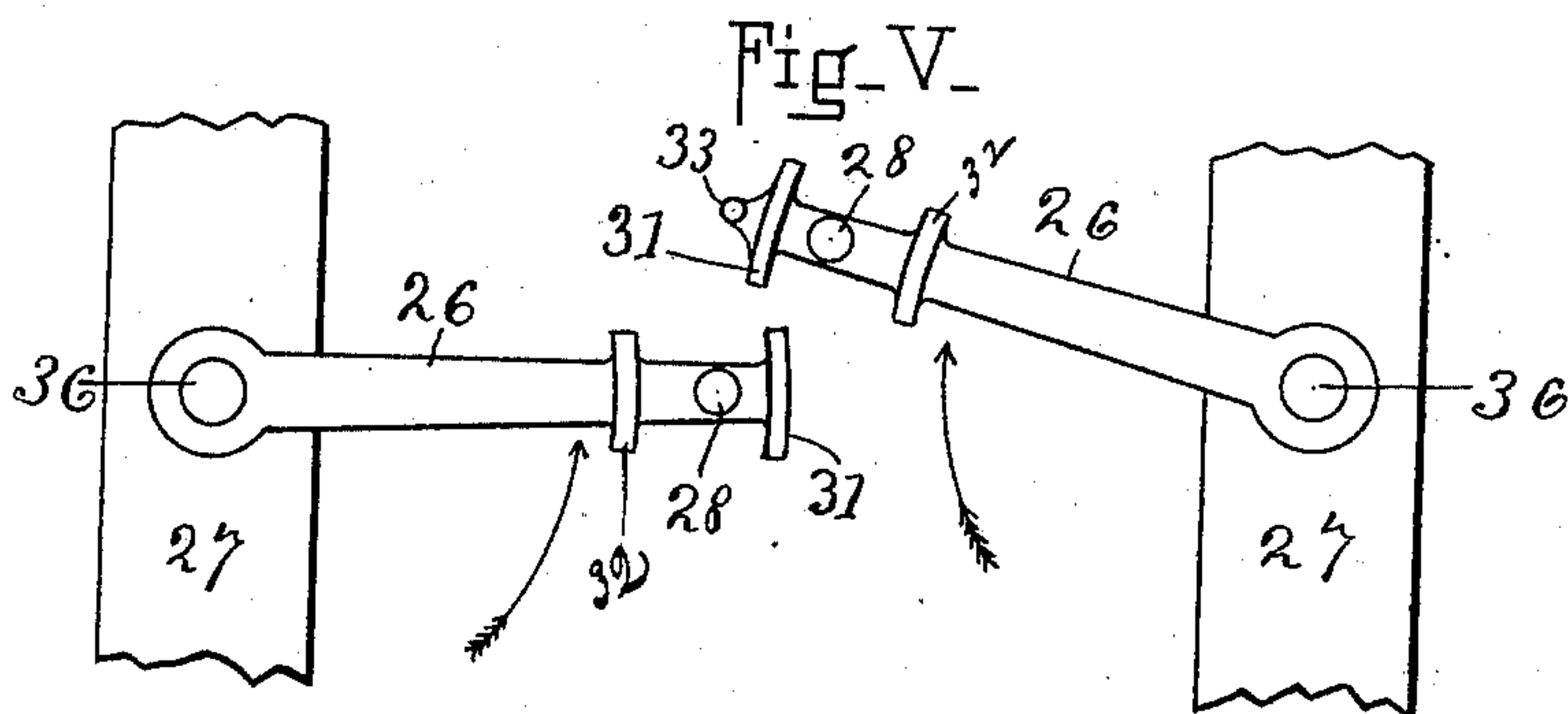
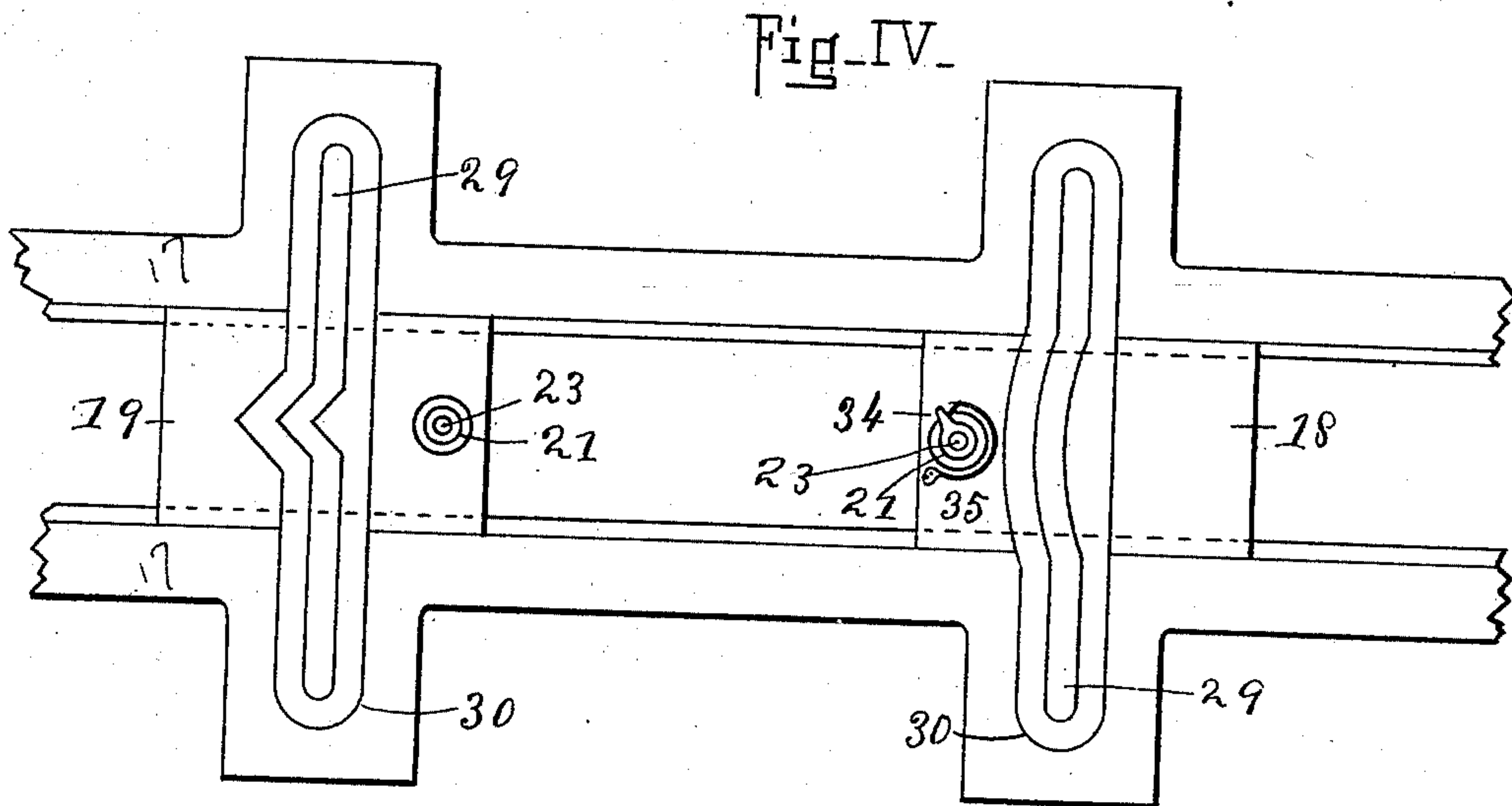
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By McFarland & Benjamin,
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Fig. VII.

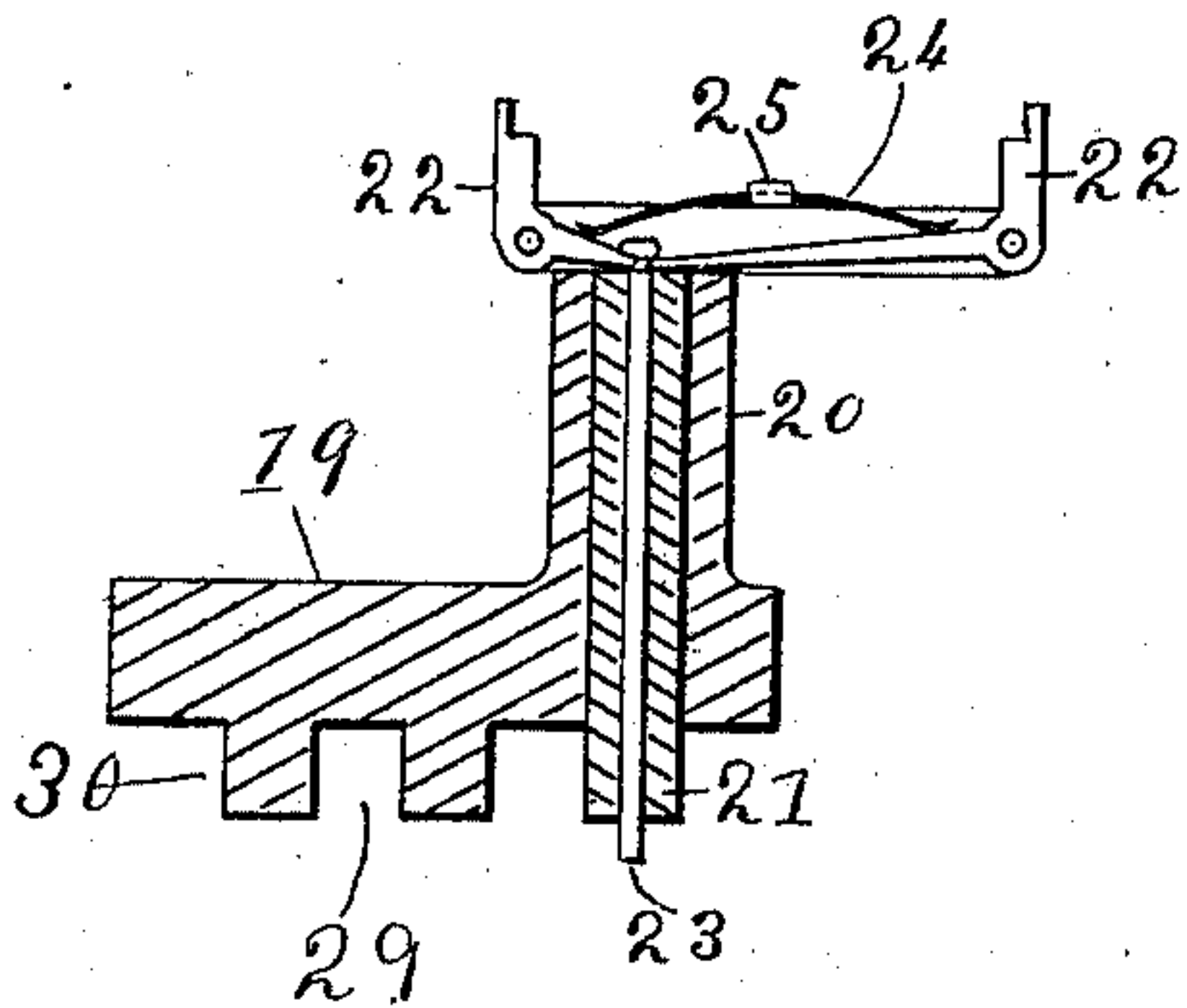


Fig. VIII.

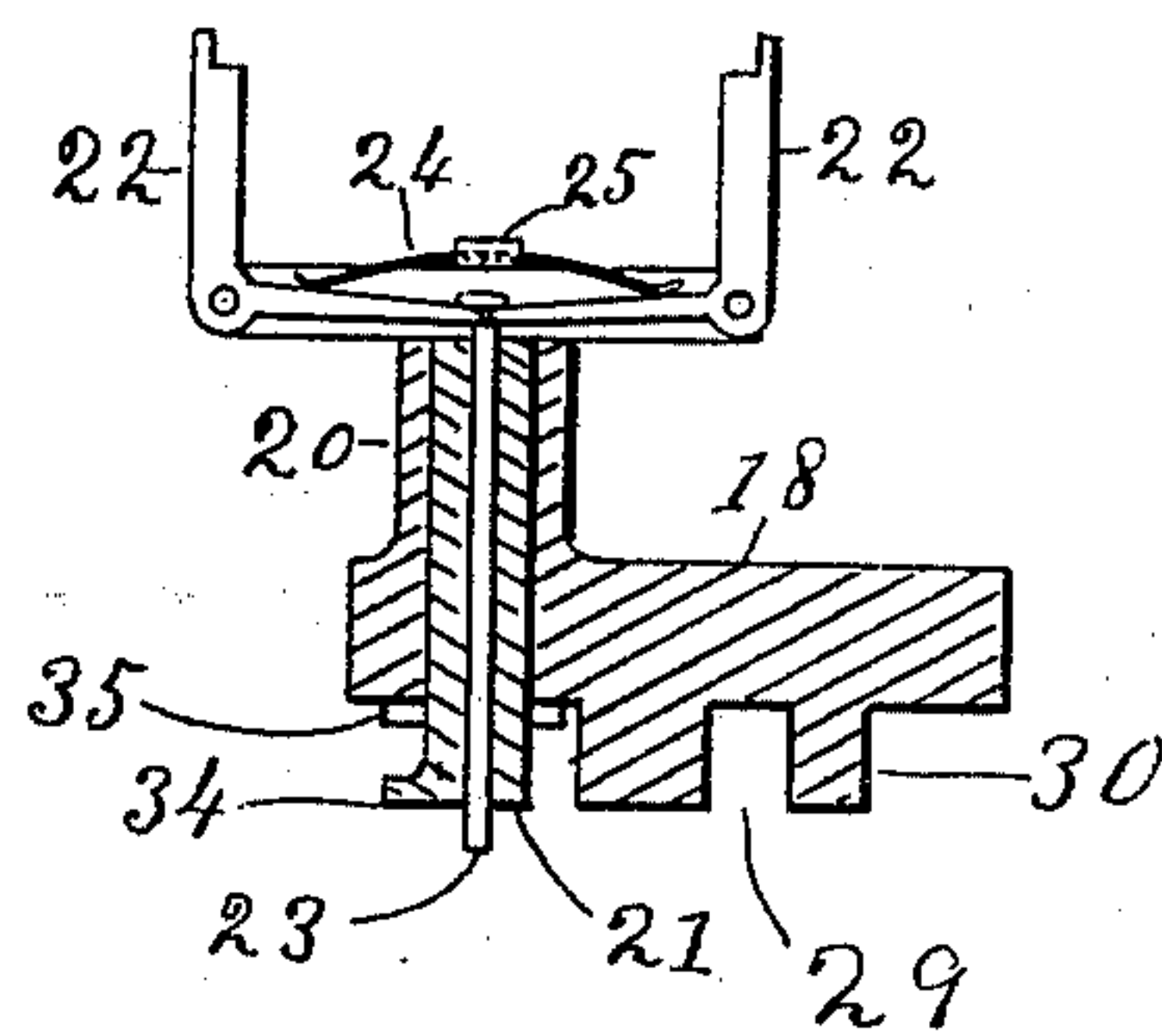
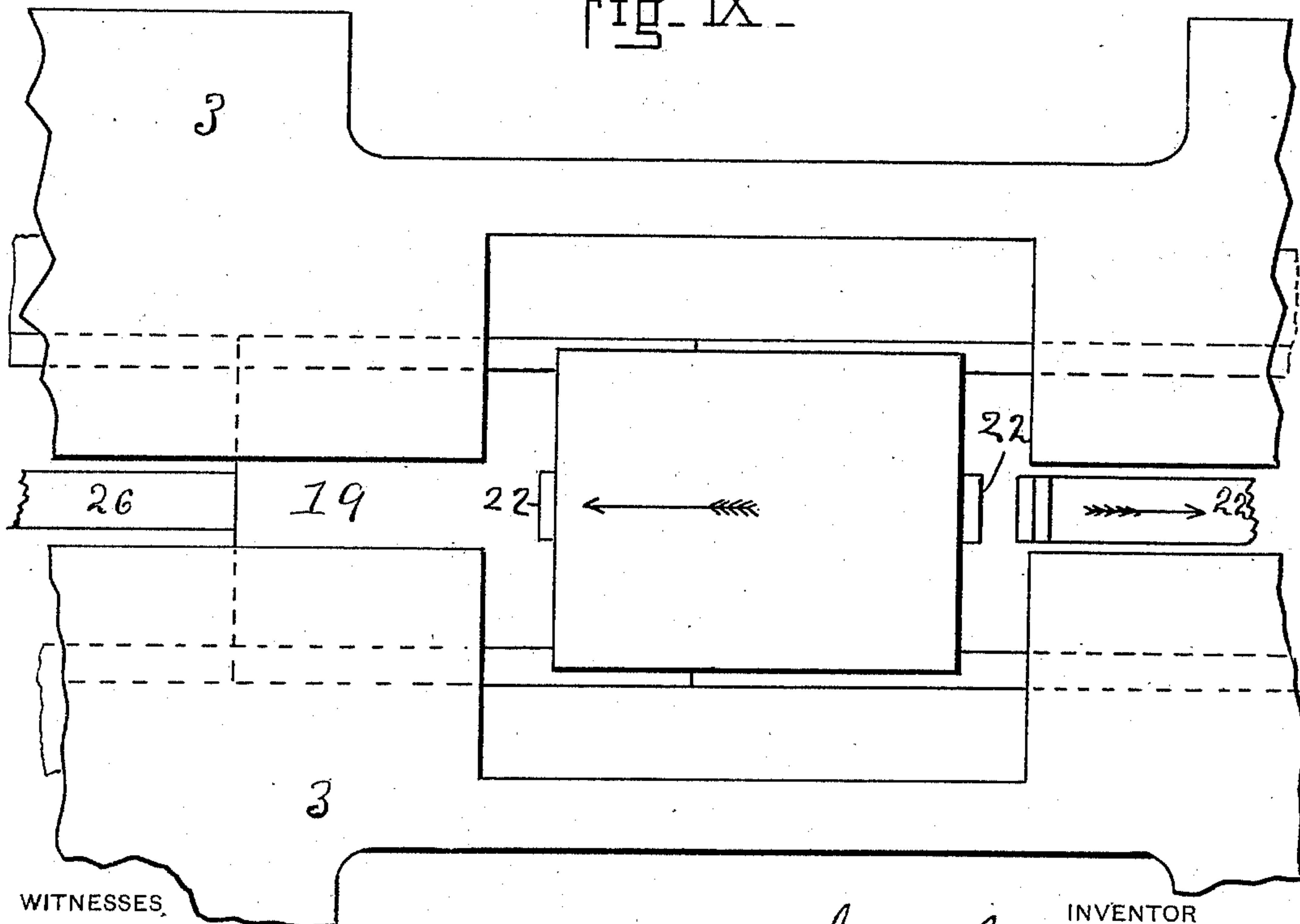


Fig. IX.



WITNESSES,

Thos. Houghton.
Edwin Guthrie

INVENTOR

I. Broome,
By McFarland & Benjamin,
His Attorneys.

UNITED STATES PATENT OFFICE.

ISAAC BROOME, OF BEAVER FALLS, PENNSYLVANIA.

TILE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,868, dated December 5, 1893.

Application filed November 5, 1892. Serial No. 451,053. (No model.)

To all whom it may concern:

Be it known that I, ISAAC BROOME, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Tile-Dressing Machinery; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the mechanical cleaning of the edges of tiles, or like rectangular objects, which have had their faces glazed or colored with liquid or plastic material and used to have the overflow or superfluous material removed from their edges before their submission to the firing process, in order that such edges may be clean, straight and free from vitrification when the tiles are baked and finished.

The object of the invention is to provide machinery to take up an unbaked tile after it has received its face coating of liquid or plastic material, and subject two of its opposed four edges to a mechanically conducted brushing operation. Then give the partially cleaned tile such a change in grasp and position as will enable the remaining two opposed edges to be brushed, after which the now completely dressed tile is ready for mechanical delivery at a point whence it can be removed for inspection or firing.

In the accompanying drawings, wherein like numerals represent the like parts, Figure I is a perspective view of the machine devised to conduct and effect the operations hereinbefore indicated. Fig. II is a vertical longitudinal section of the same, with parts shown in elevation. Fig. III is a vertical cross section, with parts broken away and indicated by dotted lines. Fig. IV is an under view of a portion of the frame and of the two carriages. Fig. V is a top view of the cranks that operate the carriages. Fig. VI is a side elevation of the cranks, as arranged relatively one to another. Fig. VII is a side elevation, partly in section, of the second or finishing carriage. Fig. VIII is a similar view of the first operating carriage. Fig. IX is a plan or top view of a portion of the bed of the machine, showing a tile in the grips of the sec-

ond carriage, on its way to the delivery end of the machine, and Fig. X is a face view of the outer strike on the two carriage-operating cranks shown in preceding figures.

In the carrying out of my invention, I provide standards 2, which support a bed 3, made and arranged in two counterpart sections, so as to leave a straight longitudinal fairway for the passage to and fro of such parts of the tile carriages as project above the plane of the bed. By recessing the edges of the sections at the center of this line of passage a large rectangular basin is provided, affording room for a horizontal turn of a tile borne upon one of the carriages. Other recesses as well as apertures are formed in the edges and bodies of the bed sections, for the insertion or admission of other parts of the machinery or to give access to such parts in the operation of the device. These all appear in the drawings, present no features of novelty, are integral with the bed sections and need not be severally indicated or described. I may, of course, choose to form my bed 3 in a single piece without departing from the substance of my invention, and in such case the fairway would appear as a long slot cut through the middle of the bed.

Upon the bed are a pair of frames 4, substantially of the form and arrangement shown. These support, longitudinally and centrally, a driving shaft 5, power-operated from without in the usual manner. They also support two other longitudinal shafts 6 and 7, one on either side of the driving shaft, and these two shafts are to be driven by the driving shaft by means of the usual belts 8 and 9, one of which is to be crossed while the other remains straight, so that both shafts 6 and 7 may be rotated in the inward or outward direction, as the case may be, by the single driving shaft. This system and arrangement of shafting and belting, being common and familiar, need not be more fully described.

On the under side of the bed are frames 10, that slide in guides 11 at right angles with the length of the bed. The sliding is effected by crank screws 12, rotatably attached to the frames and working through screw-threaded sockets 13 formed in or supported from the bed. The inner ends of the frames are fitted each with a roller 14, and above each such

roller is a roller 15, supported and turning in one of the frames 4 that carry the driving mechanism. Around each pair of rollers 14 and 15 is a vertical belt 16, the inner face of which travels downwardly. By operating the crank screws, the brushing faces of each pair of these two pairs of belts may be set nearer or farther apart, according to the distance along or across a tile whose two opposite edges are to be simultaneously brushed by passing between the belts. These belts 16 are each so joined as to present a smooth and continuous outer surface for contact with the tiles.

Below the bed and fastened to its standards are a pair of longitudinal horizontal guides 17, between and supported by which are two carriages 18 and 19, each traveling to and fro between the center and its own end of the machine. The carriage 18 is the first of the pair to take up and convey the tile whose four edges are to be brushed; holding the tile by two opposite edges and causing the other two edges to be brushed by the nearest of the pair of brushing belts, after which this carriage gives a quarter turn to the tile and delivers it to the carriage 19, which grips the tile by the two just cleaned edges and passes it between the other pair of brushing belts, which brush the edges lately gripped by the first carriage. The construction and operation of the two carriages are mainly alike, the few differences being due to the circumstance that the first carriage has to give a horizontal quarter turn to the tile before releasing it; an operation that the second carriage omits.

Recurring to the first carriage 18, the part within the guides may be considered as the body. Rising at the inner end of the carriage is a hollow column 20, within which is a hollow shaft 21, terminating above the column in a pair of hollow arms integral with the shaft and each other, and vertically and horizontally plane one to another. Pivoted in the ends of these arms are a pair of grips 22, each with a finger having its tip seated in a groove formed around the neck of a stem 23, which traverses the hollow shaft and at its under end projects below the carriage. A bow spring 24 bears down upon the fingers of the pair of grips so as normally to make the grips close in toward each other, and a yoke 25 holds the spring in place and gives it the necessary tension. When the stem 23 is forced upward the grips are spread more apart, which enables a tile to come between them and be seated on their shoulders, and when the upward pressure of the stem is relieved the spring reacts and tightens the grips upon the tile. Mechanism is now wanted to move the carriage to and fro between the guides; to strike up the stem that spreads the grips, and to give a quarter turn to the tile before releasing it. A crank 26 rotates horizontally upon a pivot set in a brace 27 that crosses the machine from standard to

standard. This crank has a wrist pin 28, engaged with and traveling to and fro in a slot 29 cut in the wide sub-base 30 of the carriage, the crank being enabled to continuously rotate (notwithstanding the engagement of its wrist pin with the slot) by sliding the carriage to and fro between its straight, parallel guides, within the prescribed limits of its route. To strike up the stem 23 the crank has a pair of strikes 31 and 32 with inclined ends; the outer strike 31 acting at the center of the machine and the inner strike 32 when the carriage is at the end of the machine. To give the quarter turn to the tile, a projection 33 at the tip of the crank strikes a projection 34 at the foot of the hollow shaft 21 and gives the shaft and consequently the grips and tile a quarter turn before said projection 33 is carried away from the described contact by the continuous rotation of the crank. As soon as the shaft is released from the pressure against its projecting foot it is restored to normal position by a spring 35 bearing upon it from a fast seat on the carriage. The crank 26 is rotated upon its pivot by a suitable system of shafts and miters driven by the same power and connected to the same source of power that drives the brushing mechanism. The last member of the system is the vertical shaft 36 which serves as the pivot of the crank.

The second carriage 19 has the forward arm of its hollow shaft 21 greatly lengthened and the hinder arm much shortened relatively to the other carriage, and this involves a longer finger to the forward grip and a shorter one to the hinder grip. The hollow shaft has not, in this carriage, the foot projection that in the other carriage helps to give a quarter turn to the tile. The crank 26 that operates the second carriage has not the tip projection that on the other crank engages with the foot projection of the hollow shaft. The forward arm in this carriage is so long, and its grips are vertically so much shorter, that when the two carriages approach each other and the grips of the first carriage 18 are quarter turned, the forward grip of the second carriage 19 passes between the grips of the carriage 18 and beneath the tile, so that when the tile is released from the first carriage it becomes seated by its hitherto ungripped edges in the second carriage.

By giving the slot 29 of the carriage 18 a curve along its center as shown in Fig. IV, the carriage is momentarily halted at the middle of the fairway, in order to give the quarter turn to the tile carried by it and to release the tile to the other carriage as it intersects its grips with those of the first carriage.

The slot 29 of the carriage 19 has a sharp angle in its center, as shown in Fig. IV, so that when this carriage approaches the middle of the machine it may move quickly into intersection with the halted carriage and having gripped the tile quarter-turned and released by the arrested carriage, may move out

of intersection, leaving each carriage to travel away from the other towards its own end.

In the working of the machine the crank 26 that operates the carriage 18 is in advance of the crank 26 that operates the second carriage 19 by about one-twentieth of a revolution, so that the quarter-turn of the tile may be effected before the second carriage advances to grip it, and that the long arm of the second carriage may pass between the grips of the first carriage and withdraw therefrom without fouling. But this, like all other matters pertaining to the time and order of movement of the moving parts of the machine, is a matter within the ordinary knowledge and skill of the operative.

To promote the practical efficiency of the machine, an apron 37 is attached to the framework of the machine, below each pair of brushing belts, to remove the droppings from said belts. A suitable scraper 38 is attached to each frame 10, with its edge in contact with the proximate brushing belt to clean the belt, and a revolving brush, 39, rotated by the belt, is supported from the upper face of the frame 10 to assist in keeping the brushing belts clean. The apron, scraper and brush present no features of novelty, and can be adapted and fitted to the machine by any body of ordinary skill in such matters.

I claim as follows:

1. The combination of the pair of carriages with the pair of horizontal cranks; each carriage supported by and moving in the slideways; having each the hollow column rising vertically from the inner end of the carriage body, the hollow shaft within the hollow column, the vertical stem within the hollow shaft, projecting below the same and having a groove around the neck of said stem; the pair of grips within the integral arms of the hollow shaft, each with a finger engaged in the groove of the vertical stem; the bow spring bearing upon the said fingers of the grips, the yoke securing said spring in place; the broad sub-base, below the slideways, having a long, curved, crosswise slot formed in said sub-base, and one of said carriages having the projection at the foot of its hollow shaft and the spring fixed to the carriage body bearing upon said shaft; each of said cranks being supported by one of its ends upon the apex of a rotatable shaft, revolved by suit-

able mechanism, and each crank having the outer strike, inner strike and wrist pin, and one of said cranks having also the tip projection; the whole substantially as and for the purposes hereinbefore described.

2. A tile dressing machine, wherein are combined the pair of carriages, each supported and moving in a slideway formed in the customary bed of the machine, and having each the hollow column rising vertically from the inner end of the carriage body, the hollow shaft within the hollow column, the vertical stem within the hollow shaft, projecting below the shaft and with a groove around the neck of said stem, the pair of grips within the integral arms of the hollow shaft, each grip with a finger engaged in the groove of the vertical stem, the bow spring bearing upon the fingers of the grips, the yoke securing said bow spring in place, the slotted sub-base below the slideway, and one of said carriages having also the projection at the foot of its hollow shaft and the spring fixed to the carriage body and bearing upon said shaft; the vertically downwardly traveling brushing belts arranged in pairs, mounted each upon a pair of rollers whereof the upper roller is supported by means of a suitable upward projection from the machine bed, and the lower roller is carried by a movable horizontal frame sliding in guides formed in the machine bed, and adjusted and held in place by a screw working in and through a screw threaded socket or attached to the machine bed; the pair of horizontal cranks engaged with the slots in the sub-bases of the aforesaid carriages, each supported at one of its ends upon the apex of a rotatable shaft and having the outer strike and inner strike and one of said cranks having also the tip projection; the said combination to be provided with a suitable system of power driven shafts, miters and belt- ing, supported upon, in or from the machine bed, for operating the aforesaid carriages and brushing belts; the whole constructed and arranged substantially as set forth and for the purposes described.

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

ISAAC BROOME.

Witnesses:

JAMES F. MERRIMAN,
WILLIAM C. GATTON.