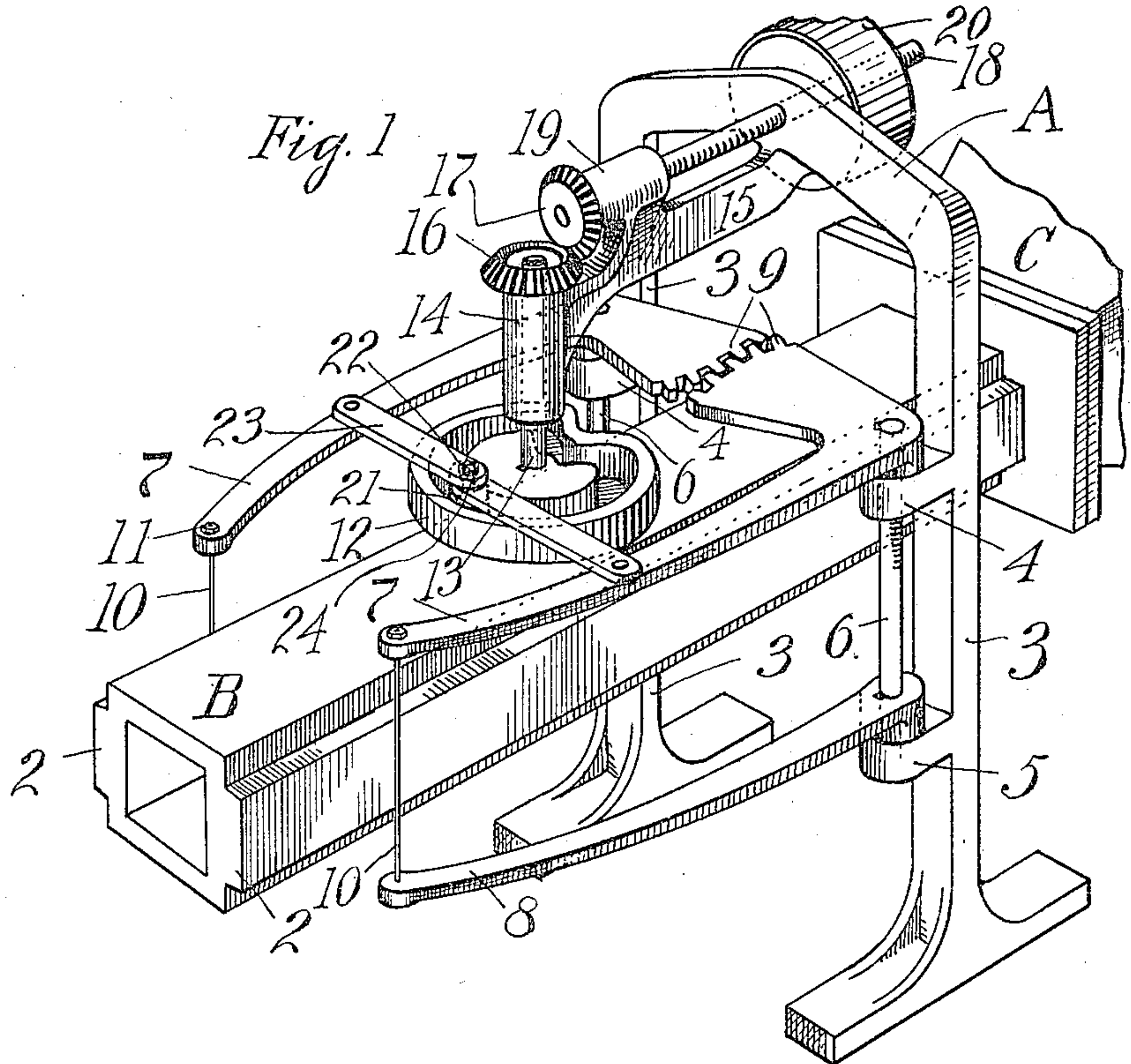


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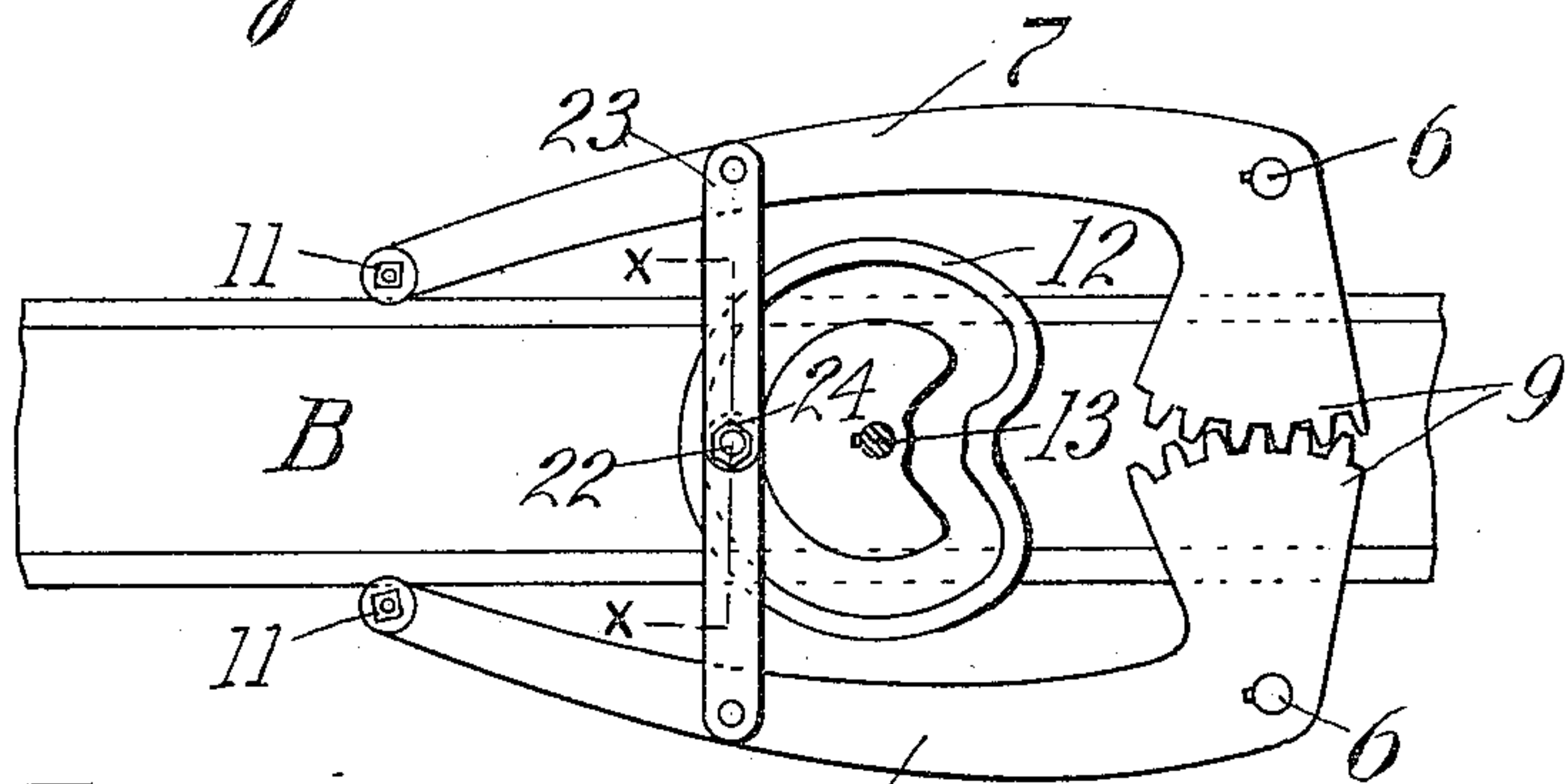
945,847.

Patented Jan. 11, 1910.

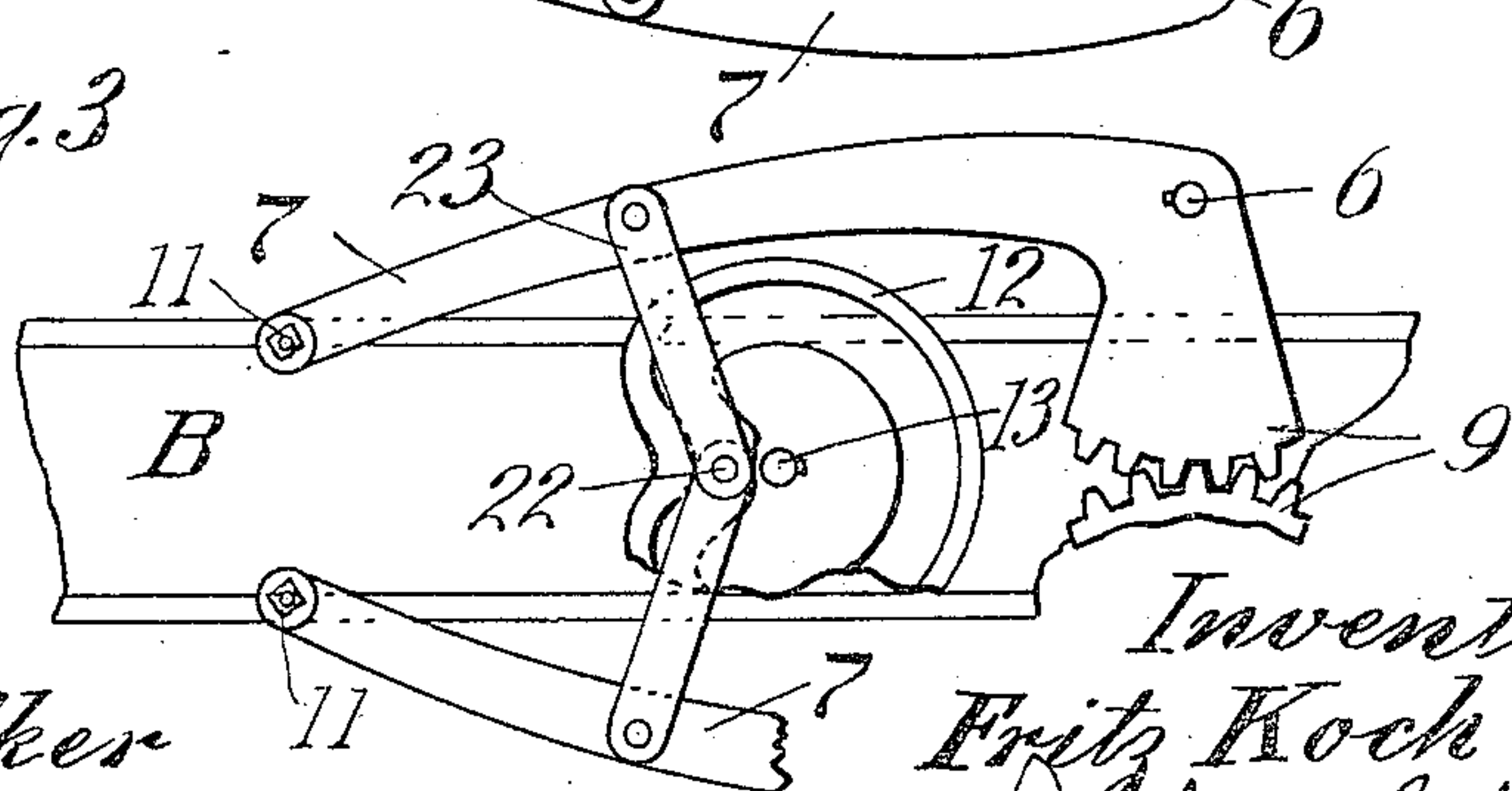
2 SHEETS—SHEET 1.



*Fig. 2*



*Fig. 3*



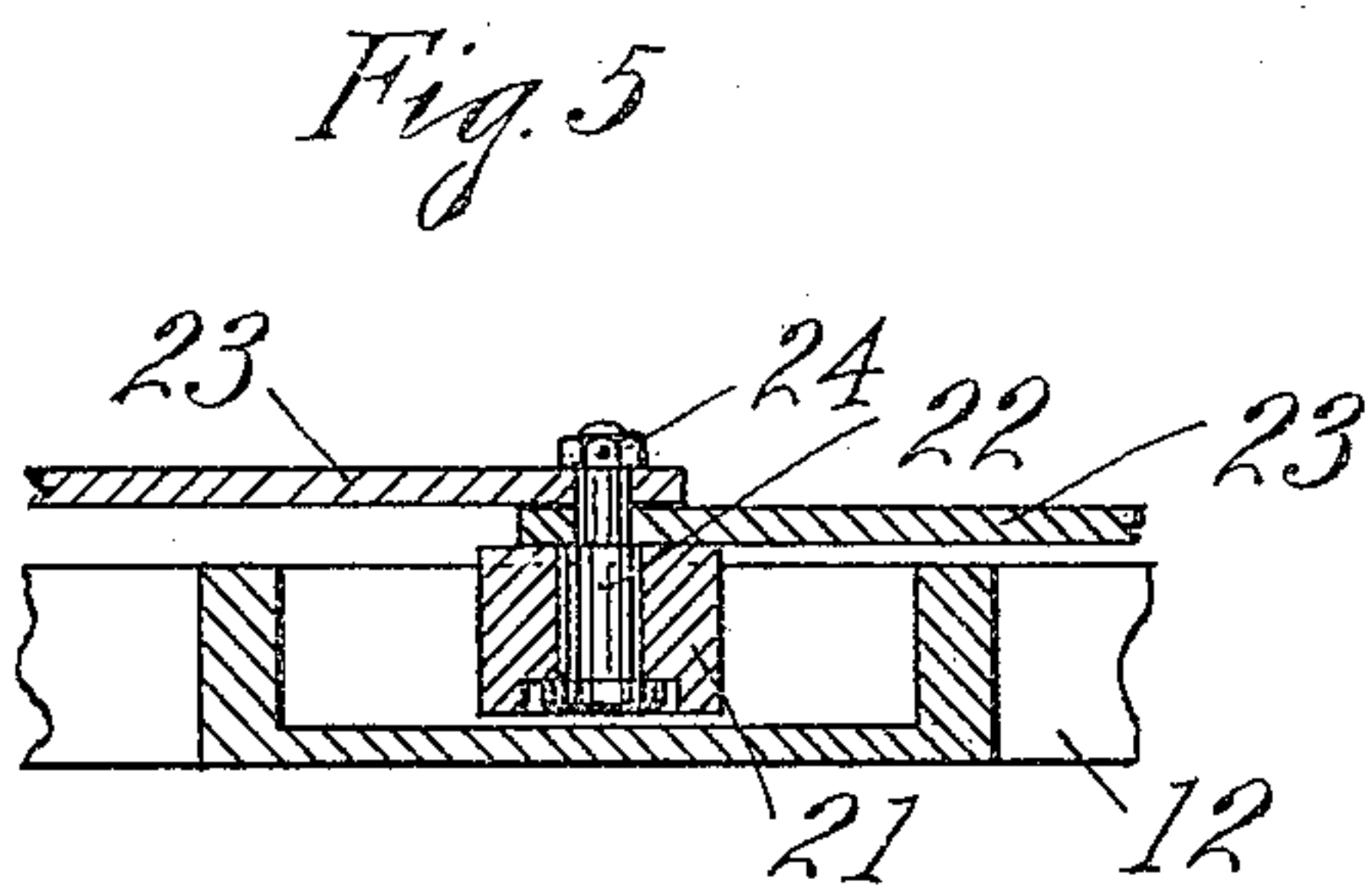
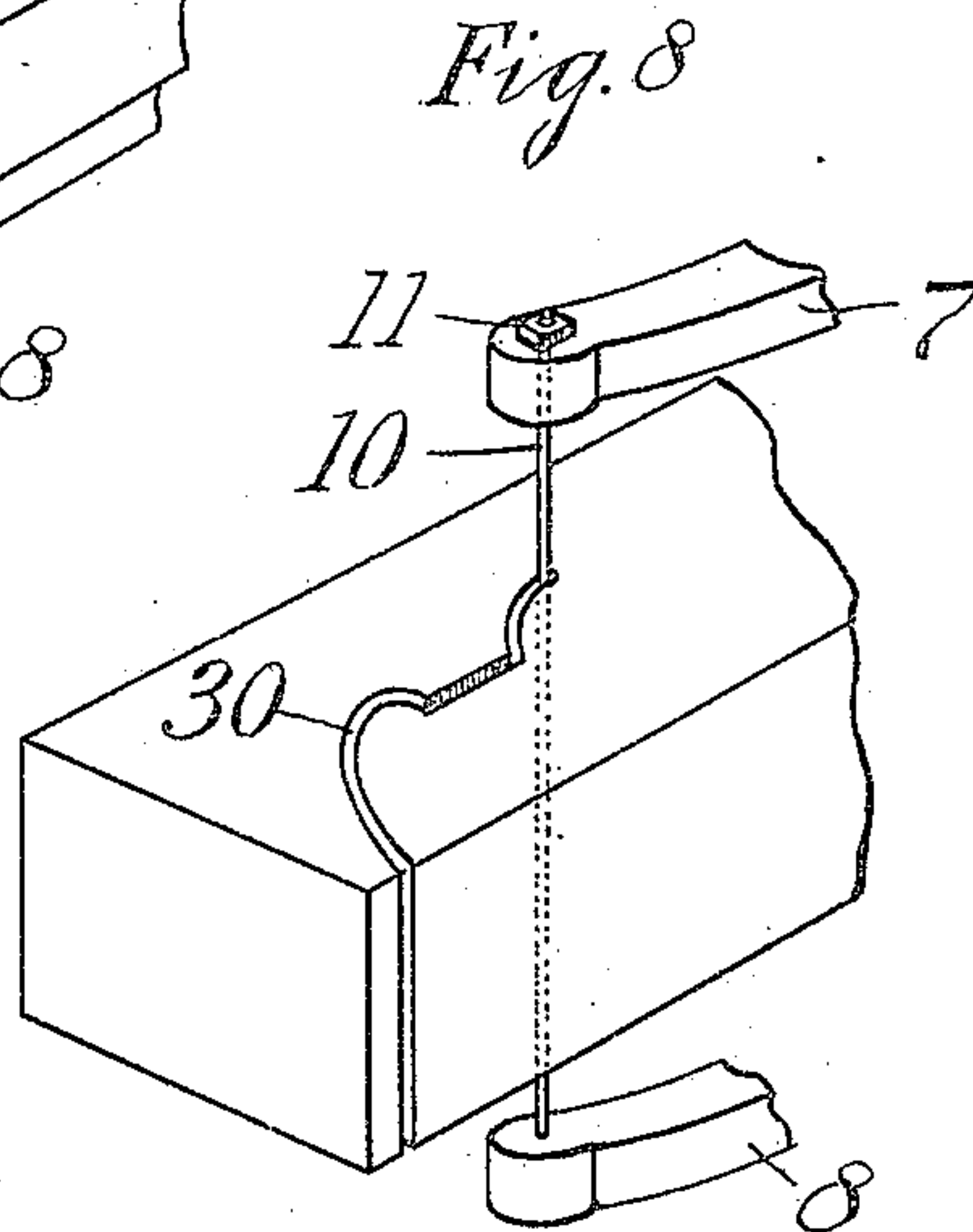
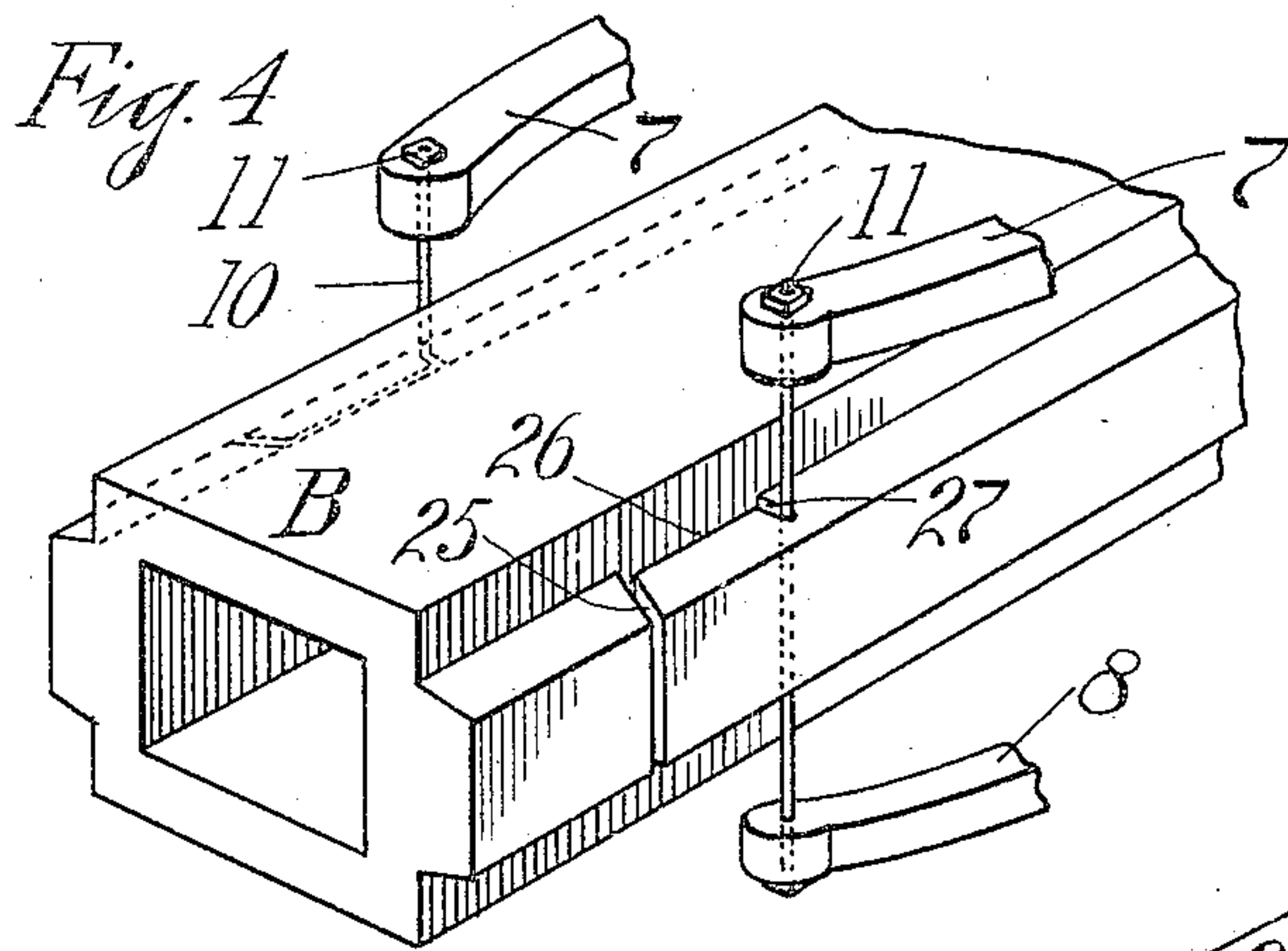
Witnesses,  
George Voelker  
Hattie Smith

Inventor,  
Fritz Koch  
by Lothrop Johnson  
his Attorneys.

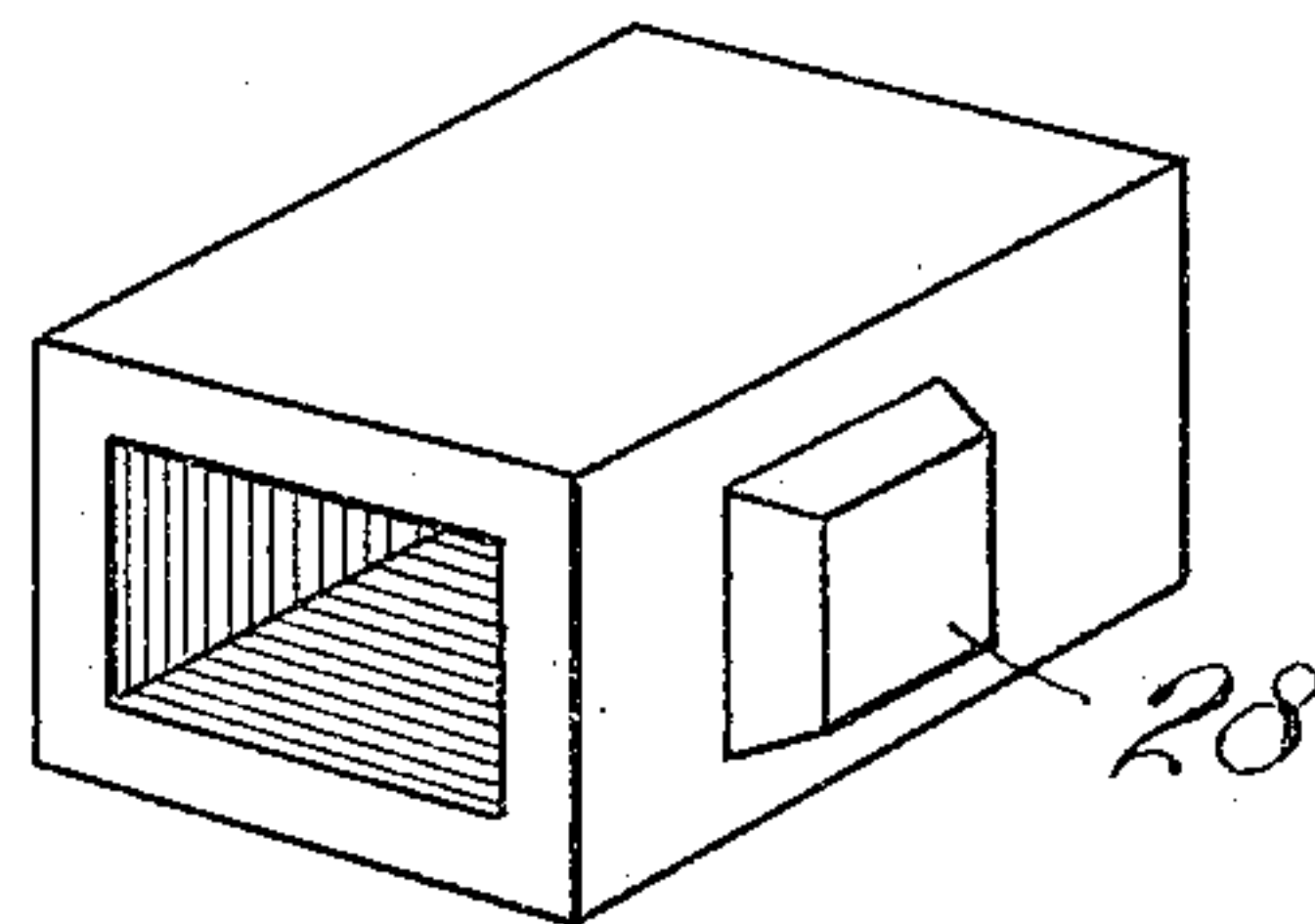
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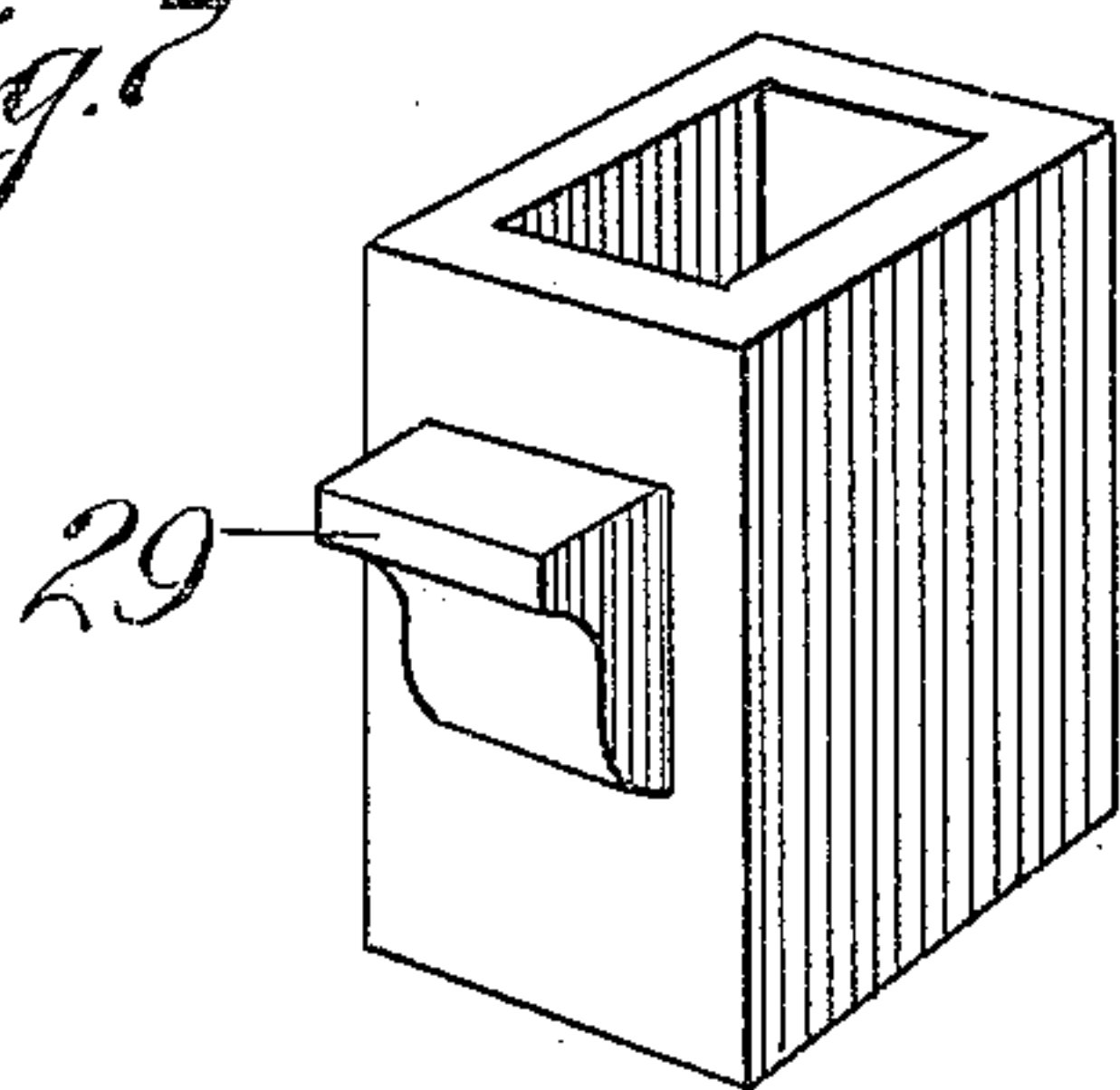
Patented Jan. 11, 1910.  
2 SHEETS—SHEET 2.



*Fig. 6*



*Fig. 7*



Witnesses,  
George Voelker  
Luttrell Smith

Inventor,  
Fritz Koch  
by Rothrop & Johnson  
his Attorneys.



# UNITED STATES PATENT OFFICE.

FRITZ KOCH, OF ST. PAUL, MINNESOTA.

MACHINE FOR TRIMMING BUILDING-BLOCKS.

945,847.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed August 3, 1908. Serial No. 446,513.

*To all whom it may concern:*

Be it known that I, FRITZ KOCH, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Machines for Trimming Building-Blocks, of which the following is a specification.

My invention relates to improvements in trimming machines for building tiles or blocks, and has for its object to provide an improved machine for cutting lugs, projections or shapes upon the outside of the slab or blank as it emerges in plastic condition from the die through which the clay is forced.

The machine is particularly adapted for cutting the projections shown and described in my application for patent filed March 30, 1908, Serial No. 424,085.

To that end the invention consists in the features of construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawings forming part of this application, Figure 1 is a perspective view of the machine with a tile-blank passing through it, Fig. 2 is a plan view of the cam and cutter-arms, showing the position of the parts at the beginning of the operation; Fig. 3 is a plan view of the same with some parts broken away, showing the parts in position after the cutting wires have entered the clay; Fig. 4 is a perspective view of the outer ends of the cutter arms and tile blank, partly broken away, showing the cutting wires about to leave the clay; Fig. 5 is a vertical section through a fragment of the cam and the links joining the cutter arms, on line  $x-x$  of Fig. 2; Figs. 6 and 7 are perspective views of finished tiles having different shaped lugs or projections formed by the machine, and Fig. 8 is a perspective view of a trimming wire cutting a scroll in a slab of clay, the cutter-arms and slab being partly broken away.

In the drawings A represents an open frame arranged at the discharge end of the die or machine C through which the clay is forced.

B represents a tile-blank or hollow slab of clay emerging from the die. It is formed on each side with a longitudinal rib 2, which, when cut and trimmed by the trimming machine which is the subject of this invention, will form projections or lugs of the character shown in Figs. 6 and 7.

On each of the side posts 3 of the frame is a pair of brackets 4 and 5 arranged one above the other at a suitable distance apart and alining with the corresponding brackets on the other post. Rotatably supported in each pair of brackets is a wire supporting frame comprising a vertical post or rock-shaft 6 journaled in the brackets and a pair of horizontal cutter arms 7 and 8 seating on the brackets. Carried by the frames at some convenient place near their inner ends are a pair of intermeshing segmental racks 9 whereby the frames on both sides of the machine are mutually controlled and made to swing in unison. The arms of each frame are spaced apart a sufficient distance to clear the tile blank or slab to be operated upon when they are moved inwardly toward it.

At their outer ends the arms 7 and 8 of the wire supporting frame are connected by means of a vertical cutting wire 10 which is held by the arms under tension. This is best accomplished by extending the wire through a hole in one or both of the arms and tightening a nut 11 upon its threaded projecting end as shown in the drawings.

The cutter arms on opposite sides of the machine are moved toward and away from each other by means of a horizontally working grooved cam 12 which can be shaped to impart to the arms whatever movement may be necessary to form the desired lug upon the block. The cam is keyed to a vertical shaft 13 journaled in a bearing 14 upon the end of a horizontal bracket 15 carried by the frame. The shaft 13 is driven from any suitable source of power (not shown) by means of the intermeshing bevel gears 16 upon the upper end of the said shaft and 17 upon a horizontal shaft 18 journaled in bearings 19 upon the bracket 15. The shaft 18 is shown carrying a belt-pulley 20.

Working within the grooved cam is a roller 21 rotatable upon a vertical shaft or pin 22 pivotally supported in the overlapping ends of links 23 and held at the top by a nut 24. The outer ends of the links 23 are pivotally connected with the upper cutter arms 7.

At the beginning of the operation the parts will stand in the position shown in Figs. 1 and 2 with the wires and arms separated as far as the links 23 will permit, so that the slab of clay will pass freely between them as it moves forward from the die. As



the cam and cam shaft are rotated from the shaft 18 through the medium of the gears 16 and 17, the cam will move the roller-pin 22 backward or forward (in this case backward) in a direction substantially parallel with the cutter arms, and thus draw the arms and wires in toward each other so as to cause the wires to cut into the ribs upon the sides of the intervening slab of clay, as illustrated in Fig. 3, where the cutter arms are shown at the extreme limit of their inward travel.

As the clay blank is moving ahead all the time, the wires will not cut perpendicularly into the rib but along an inclined path 25 as shown in Fig. 4. The cam is so shaped that for a few moments after the wires have reached their extreme inward position the arms and wires will remain practically stationary; but as the clay blank is moving ahead the wires will cut the rib away along the path 26 lying in the plane of the side of the tile or parallel therewith, according to the shape of the cam. When the cam turns farther the cutter arms and wires will be forced apart, and the wires will cut their way out through the rib along the backwardly inclined path 27 shown in Fig. 4. The cam shown in the drawings is so shaped that the arms and wires will then remain stationary long enough for the slab or tile blank to move ahead the length of the desired projection, when the wires will be caused to move in again to cut the rib away between the projections. The slab or blank may then be cut up in the usual way into blocks having any desired number of projections.

The cam and operation illustrated in the drawings result in the formation of the truncated pyramidal projections 28 shown in Fig. 6, but obviously the cam may be shaped in all sorts of ways so as to produce a great variety of projection-shapes, such for instance as the bracket like projection 29 shown in Fig. 7.

While the machine is particularly useful in shaping projections upon hollow tiles as shown in Figs. 6 and 7, it can be used quite as well to cut shapes and ornamental designs in a solid block, such as the scroll illustrated in Fig. 8, the path of the wire being controlled by the shape of the cam. And where projections are to be cut upon only one face of the block, only one wire is to be used, the other wire being removed from its supporting cutter arms.

The word "block" as herein used is intended to include hollow or channeled tiles as well as solid blocks; and by the word "wire" I mean not only a wire properly so called, but any cord, cable, or other instrumentality which will work in substantially the same way as a wire proper.

I claim as my invention:

1. The combination, with a die through which plastic material is forced in a continuous mass, of a pair of wire supporting frames having swinging support near the mouth of the die, one on each side thereof, a wire held taut in the outer end of each frame, a cam operatively connected with both frames and so shaped as to impart to said frames a reciprocating movement toward and away from each other, and mechanism for turning the cam.

2. The combination, with a die through which plastic material is forced in a continuous mass, of a pair of wire supporting frames having swinging support near the mouth of the die, a wire held taut in the outer end of each frame, a cam operatively connected with both frames and so shaped as to impart to them a reciprocating movement toward and away from each other, and cooperating means carried by the frames for causing them to move in unison.

3. The combination, with a die through which plastic material is forced in a continuous mass, of a pair of wire supporting frames rotatably supported near the mouth of the die, a wire held taut in the outer end of each frame, a cam operatively connected with both frames and so shaped as to impart to said frames a reciprocating movement toward and away from each other, and intermeshing racks carried by the frames, whereby the frames are made to move in unison.

4. The combination, with a die through which clay is forced in a continuous mass, of a pair of wire-supporting frames having pivotal support near the mouth of the die, a wire removably held in the outer end of each frame, a cam operatively connected with both frames, and so shaped as to impart to said frames a reciprocating movement toward and away from each other, and offset intermeshing racks carried by the frames near their pivotally supported ends, whereby said frames are moved in unison.

5. The combination, with a die through which plastic material is forced in a continuous mass, of a pair of wire supporting frames having swinging support near the mouth of the die, one on each side thereof, a wire held taut in the outer end of each frame, a cam operatively connected with both frames and shaped to cause them to move toward and away from each other, and means for causing the two frames to work in unison.

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

FRITZ KOCH.

Witnesses:

ARTHUR P. LOTHROP,  
HATTIE SMITH.