

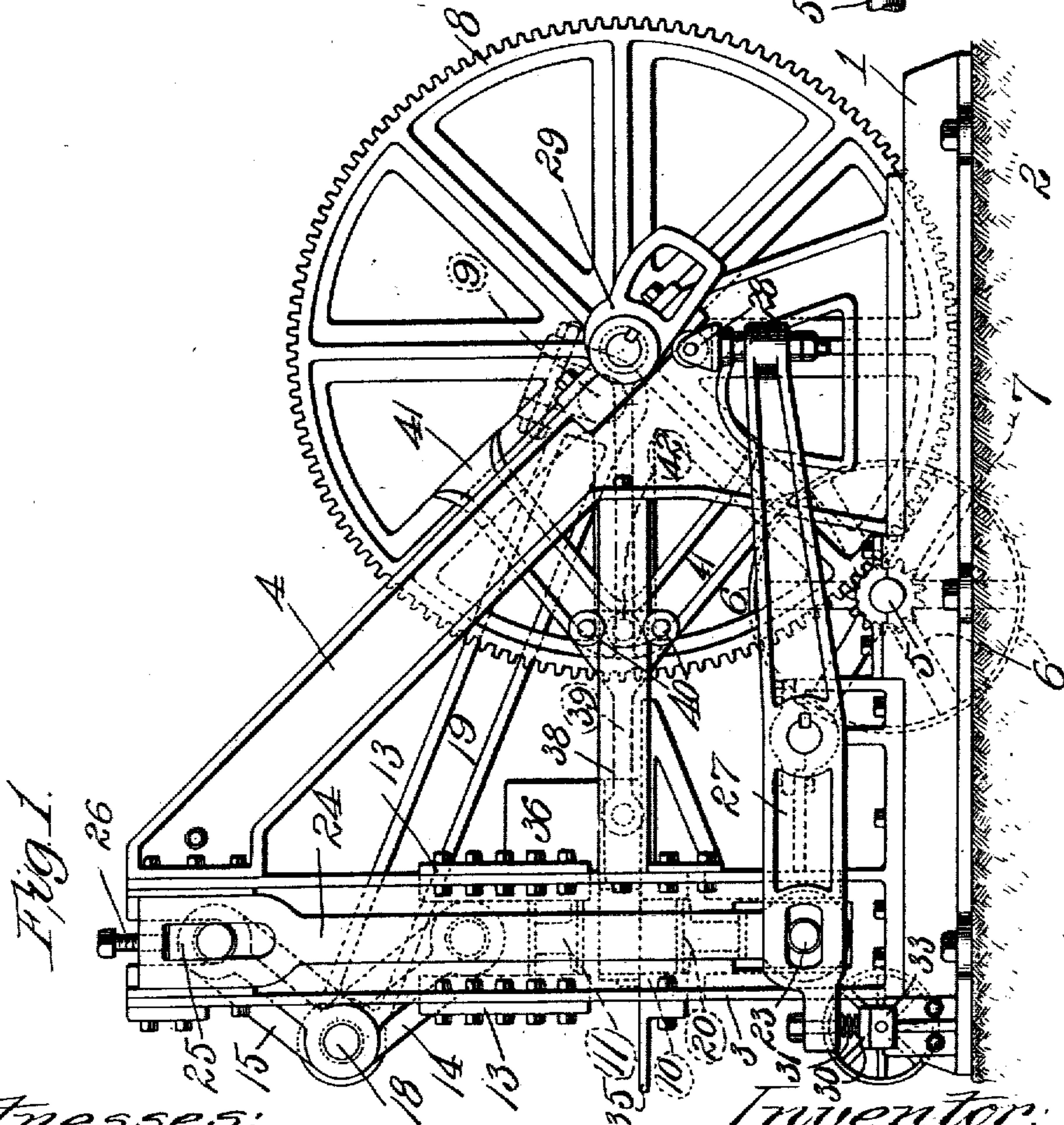
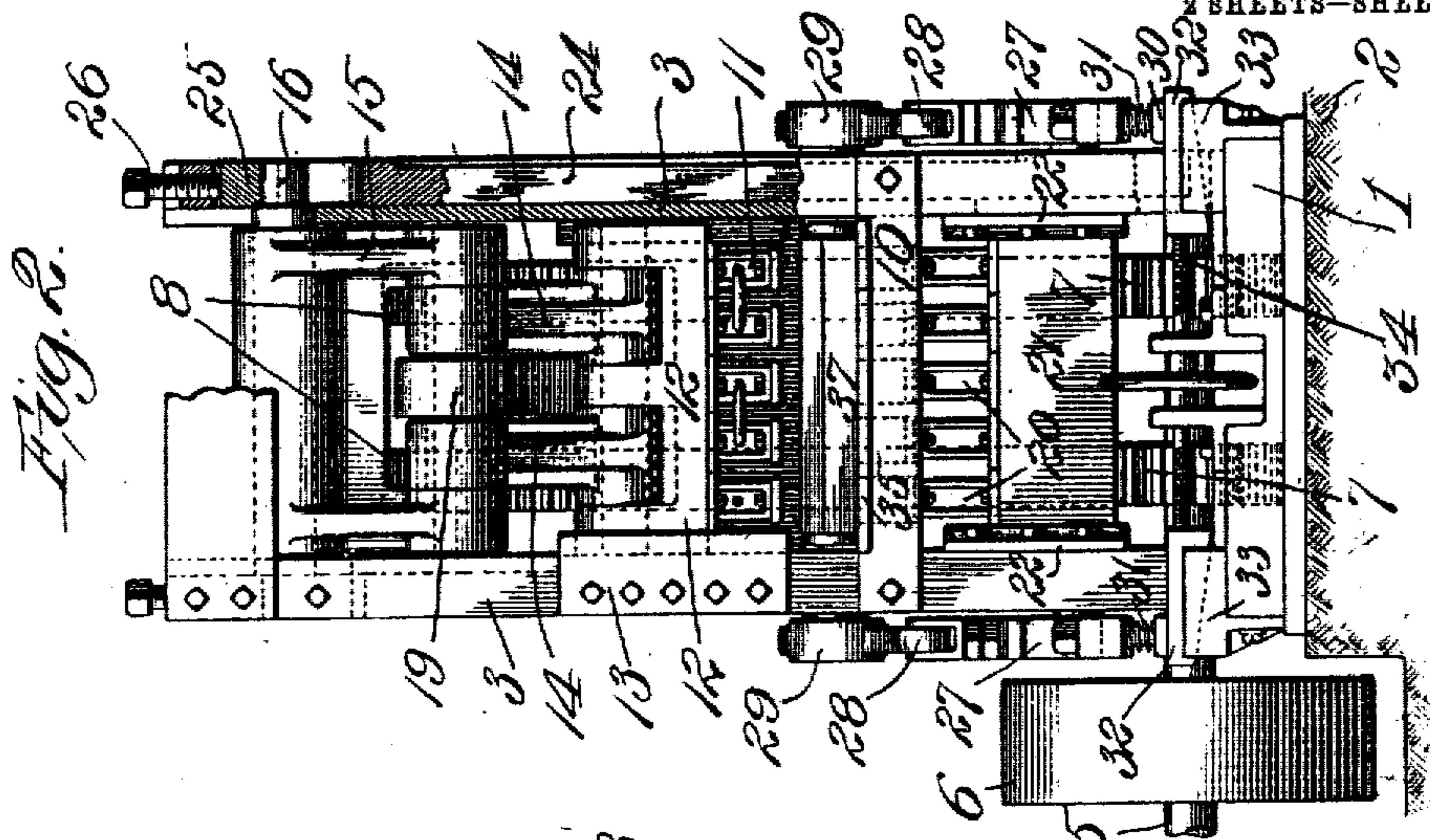
No. 791,262.

PATENTED MAY 30, 1905.

W. P. GRATH.
BRICK MACHINE.

APPLICATION FILED NOV. 4, 1904.

2 SHEETS—SHEET 1.



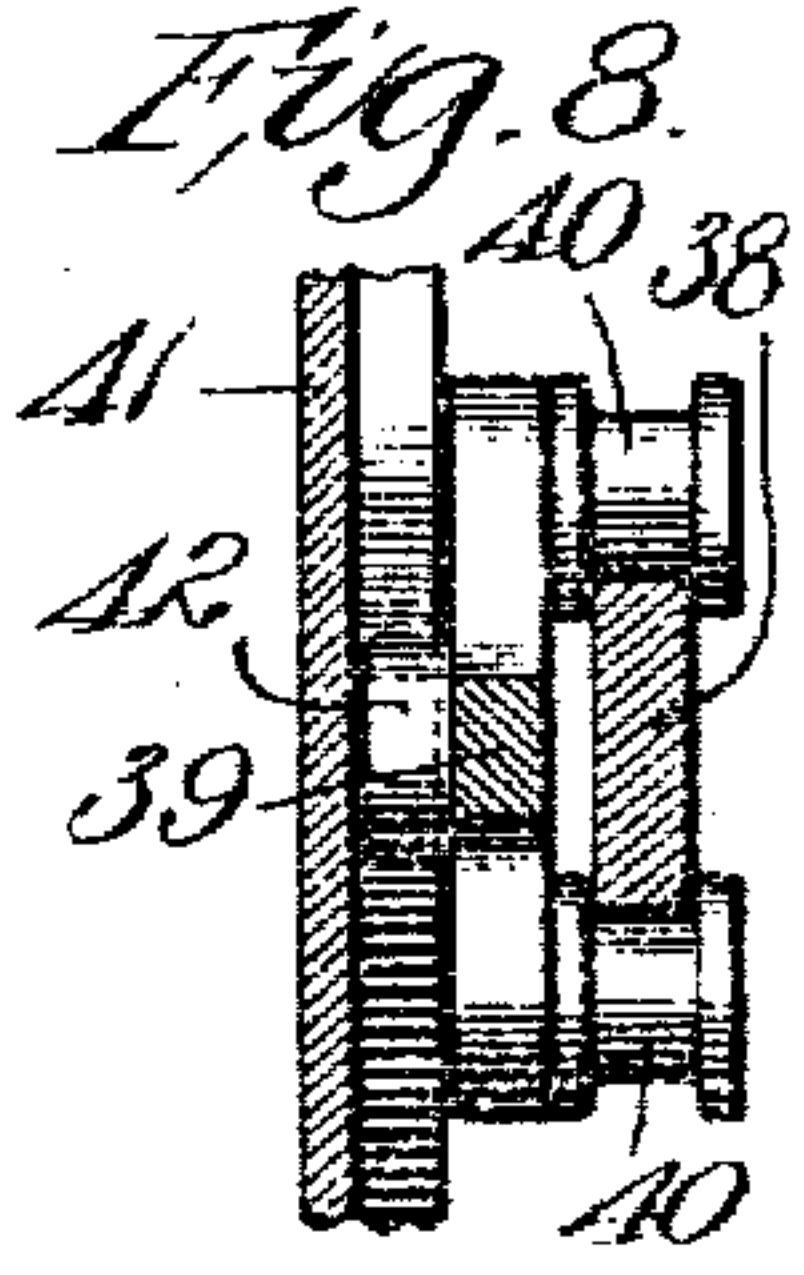
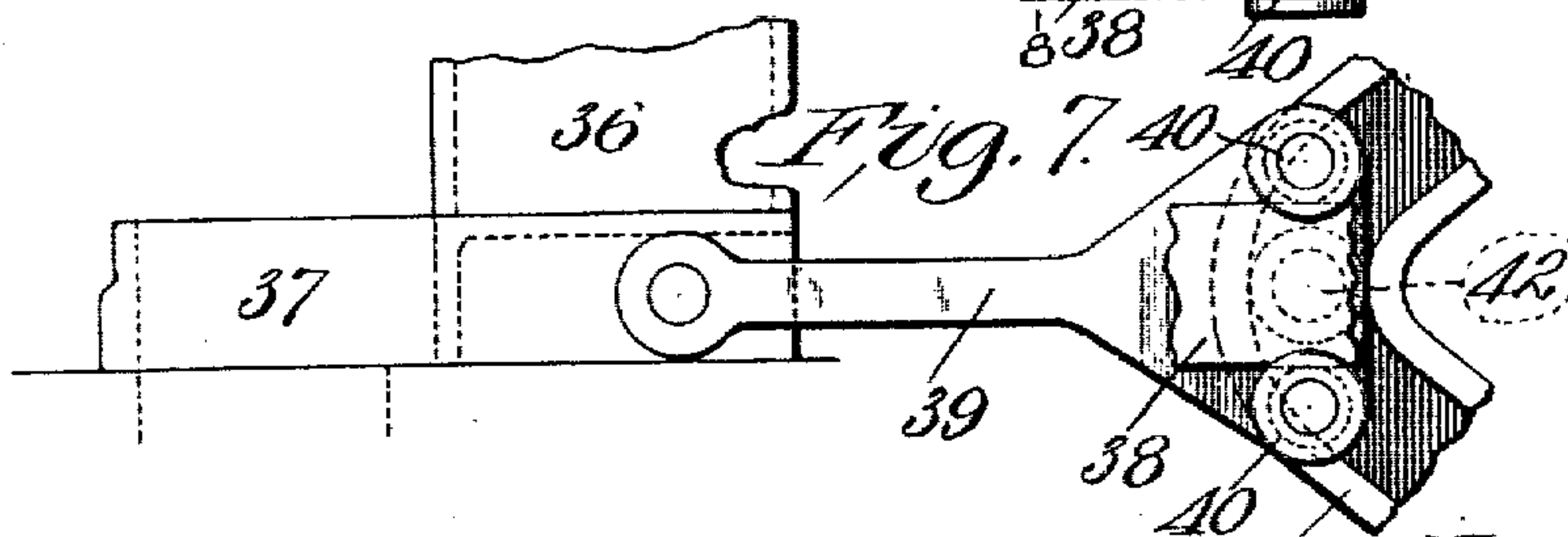
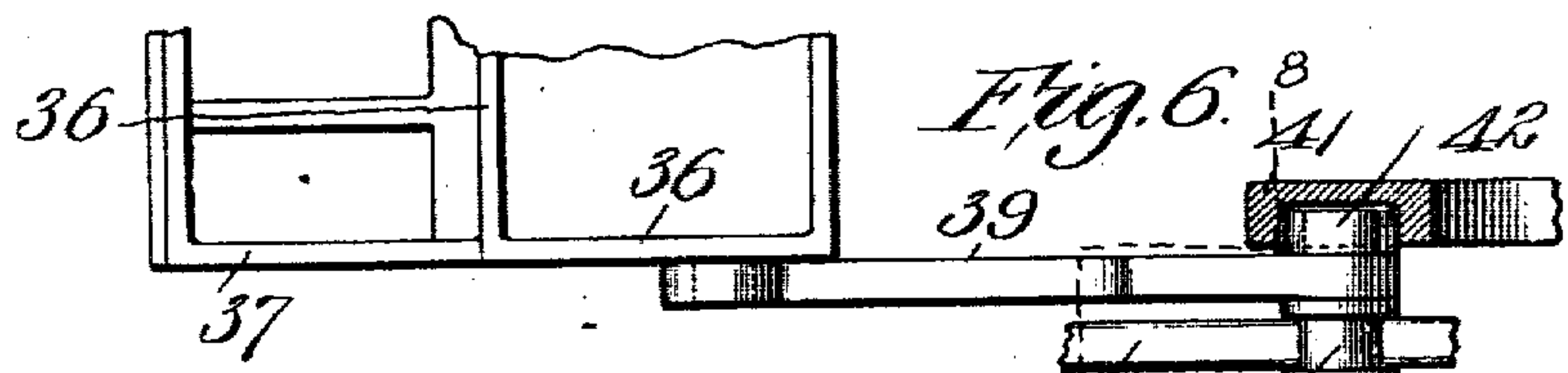
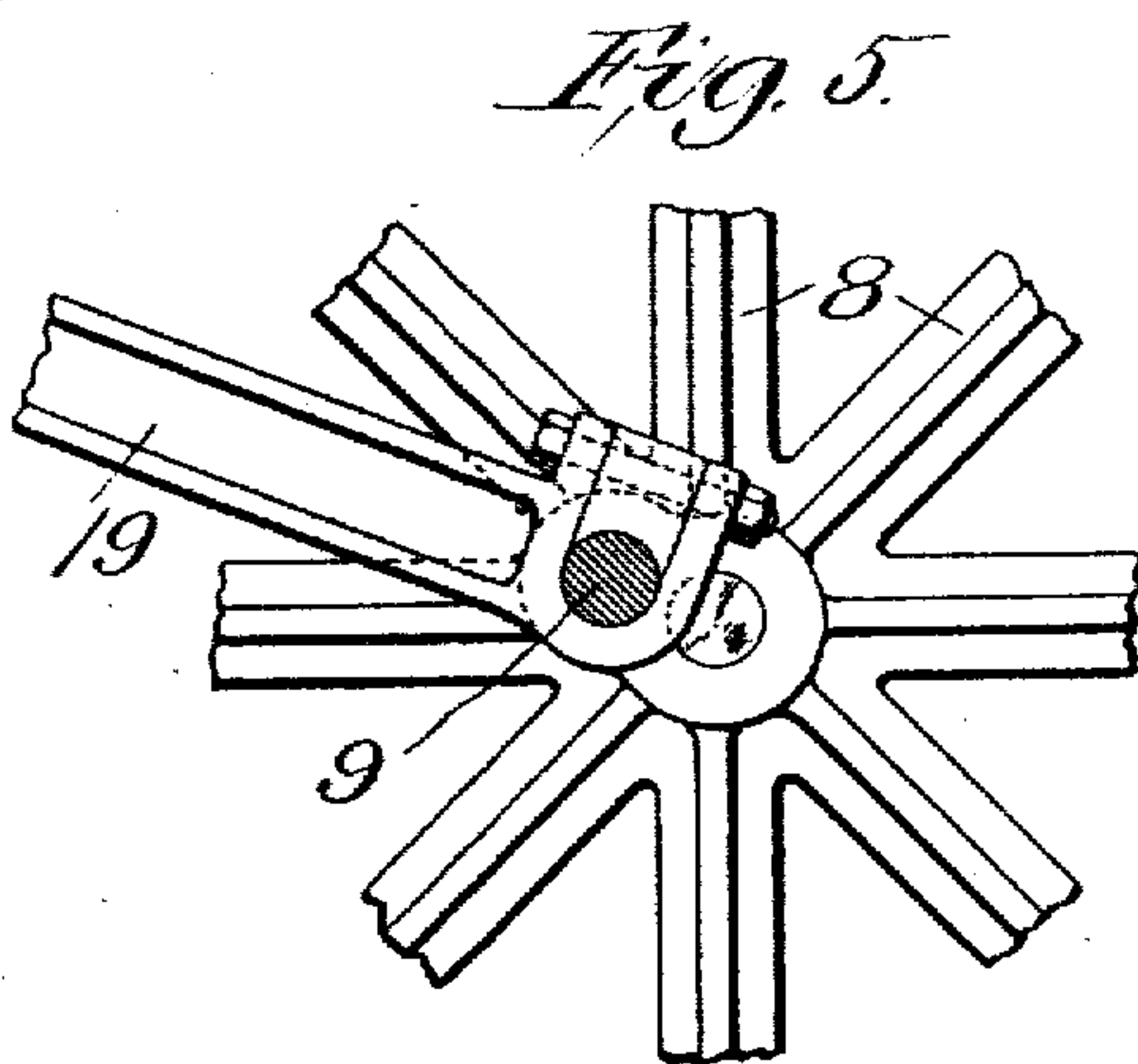
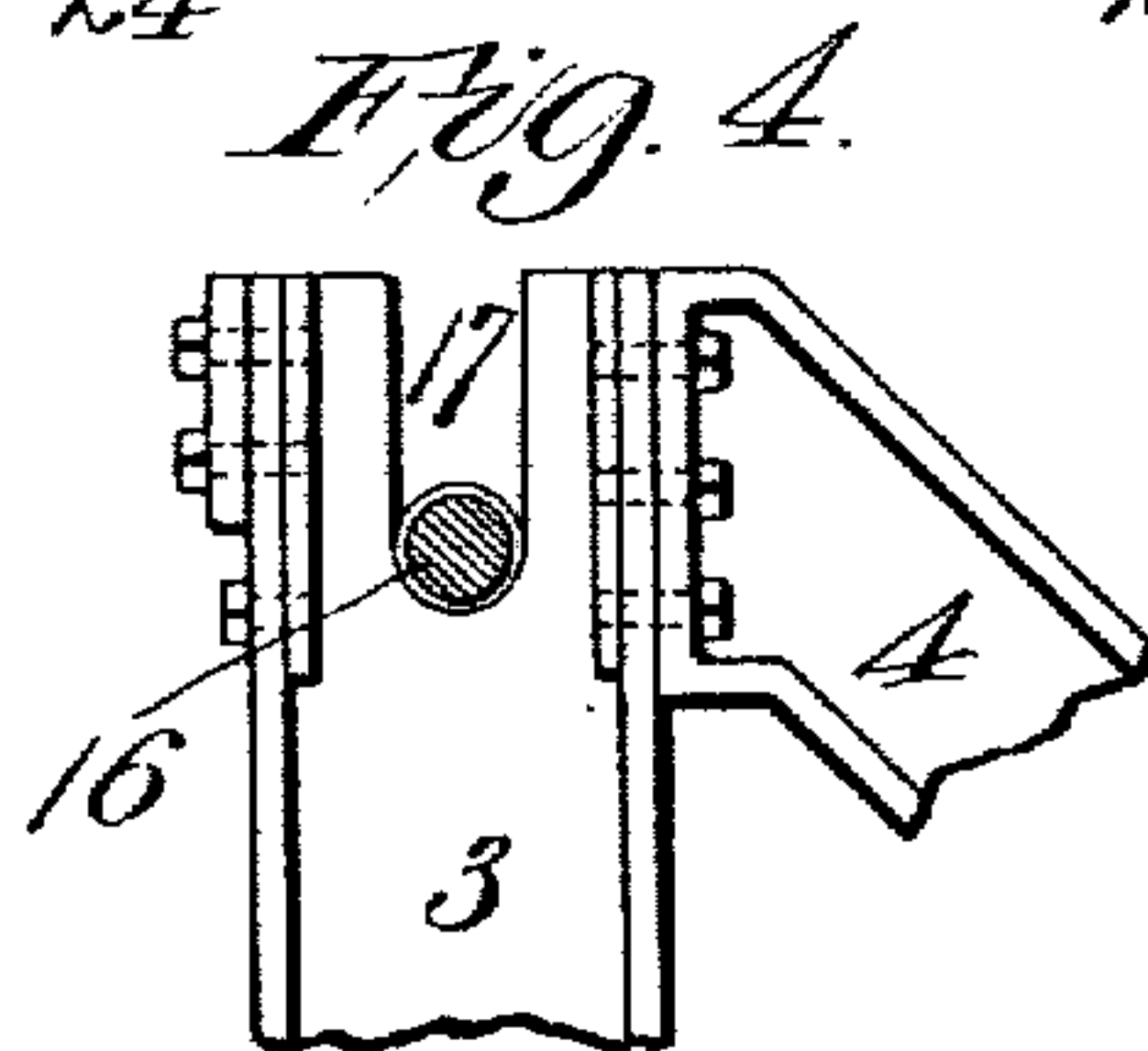
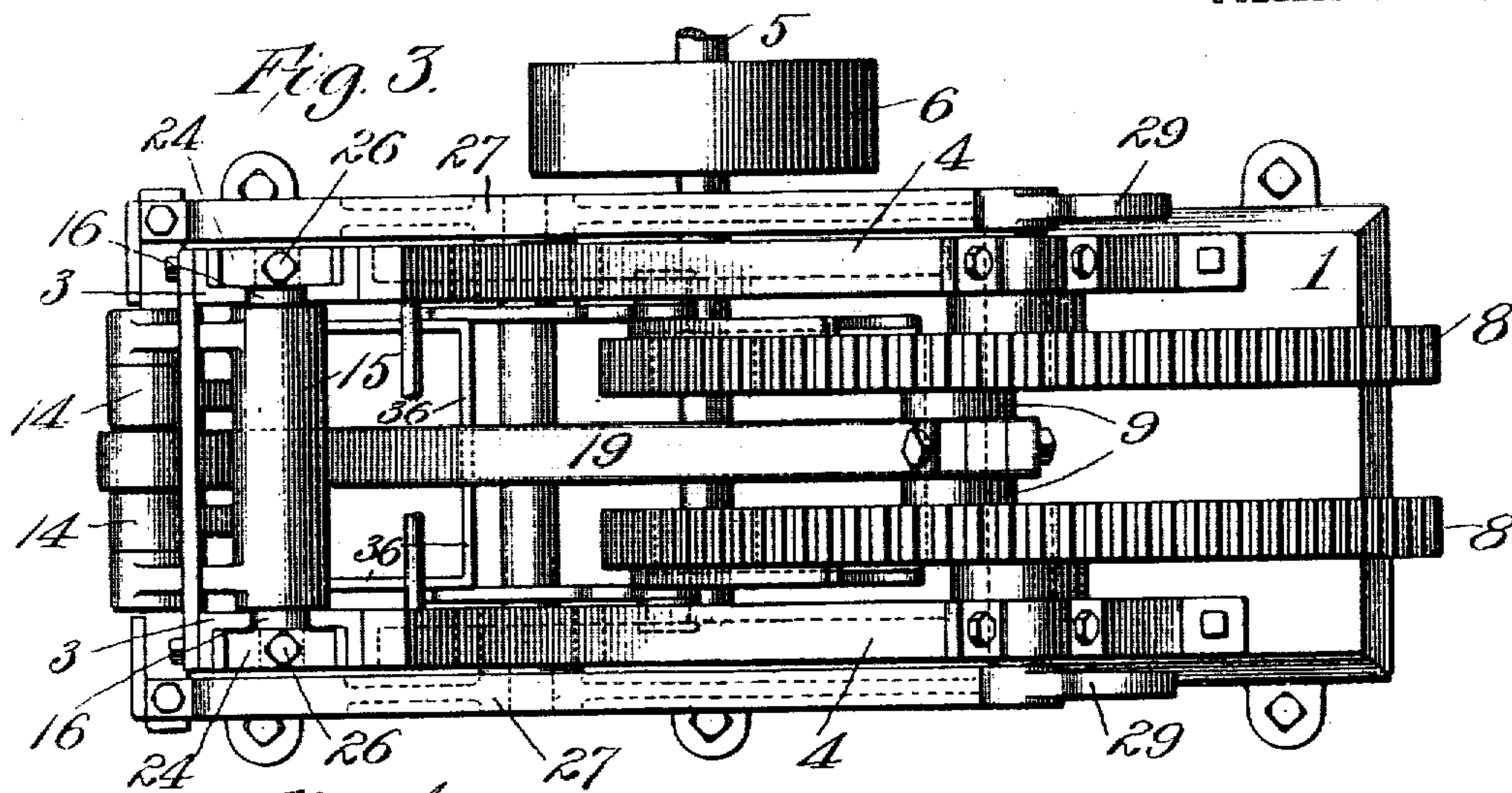
Witnesses:
Wm. H. Scott.
Fred B. Reimer.

Inventor:
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BRICK MACHINE.

APPLICATION FILED NOV. 4, 1904.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WALTER P. GRATH, OF ST. LOUIS, MISSOURI.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 791,262, dated May 30, 1905.

Application filed November 4, 1904. Serial No. 231,346.

To all whom it may concern:

Be it known that I, WALTER P. GRATH, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have
5 invented a new and useful Improvement in Brick-Machines, of which the following is a specification.

My invention relates to brick-making machinery, and has for its principal objects to
10 simplify the construction of brick-presses, to avoid the use of any bearings not absolutely indispensable, to provide improved means for actuating the charger of the machine, to strengthen and simplify the frame, to lower
15 the center of gravity of the machine, to avoid unbalanced strains on the frame, and other objects hereinafter more fully appearing.

My invention consists in the parts and in the arrangements and combinations of parts
20 hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a side view of the machine. Fig. 2 is
25 a front view with parts in section. Fig. 3 is a plan view. Fig. 4 is a side view of one of the bearings for the upper end of the toggle. Fig. 5 is a fragmentary view of one of the spur-gears and the pitman. Fig. 6 is a plan
30 view of one of the charger-rods and connected parts. Fig. 7 is a side view of the parts shown in Fig. 6, and Fig. 8 is a section on the line 8 8 of Fig. 7.

The base 1 of the machine is adapted to be
35 secured to a foundation 2 of any desired character. Near the front of the base columns 3 are secured, and from the rear portion of the base rise frame members 4, which are forwardly inclined and are united at their upper
40 ends to the upper ends of the columns 3. Between the point of attachment of the columns 3 and frame members 4 to the base bearings are arranged for a primary shaft 5. The latter projects at one end beyond the base and
45 is provided with a pulley 6, to which the power to actuate the machine is communicated from any desired motor. Intermediate its bearings the shaft is provided with two pinions 7. Two
50 spur-gears 8 mesh with the pinions 7 and have their shafts journaled in bearings on the

frame members 4. The two spur-gears are connected together by a crank-pin 9, so that the two gears move as one. By the use of the two spur-gears it is possible to balance
55 all of the strains upon the frame.

Molds 10, in which the bricks are formed, are mounted between the columns 3. In the present case molds for five bricks are shown, though it is obvious that the number is immaterial. The tops of the molds are formed
60 by plungers 11, secured to a cross-head 12, which moves in a slideway formed by bolting plates 13 to the columns 3. The cross-head 12 is carried at the lower end of the lower links 14 of a toggle. The upper link 15 of
65 the toggle is mounted at its upper end upon a shaft 16, which extends into open-topped bearings 17 in the tops of the columns. The middle pivot 18 of the toggle is connected directly with the crank-pin 9 on the spur-
70 wheels 8 by means of a pitman 19. The bottoms of the molds are formed by plungers 20, secured to a cross-head 21, which moves in slideways formed by angle-bars 22, secured to the inner faces of the columns 3. The cross-
75 head 21 is provided with gudgeons 23, which extend through openings in the columns. Links 24 connect the ends of the shaft 16 at the upper end of the toggle with the gudgeons 23 on the cross-head 21. The upper ends of
80 the links 24 are slotted so as to permit the links to rise when the shaft 16 is seated in its bearing. Bearing-blocks 25 are mounted in the upper parts of the slots in the links 24 by means of adjusting-screws 26. By this ar-
85 rangement the maximum distance between the shaft 16 and the gudgeons 23 may be adjusted, and thus the machine may be adjusted to make bricks of different thicknesses. The gudgeons 23 also extend into slots near the
90 front ends of discharging-levers 27 at the sides of the machine and pivoted in bearings back of the columns 3. In the rear ends of the discharging-levers 27 rollers 28 are adjustably mounted. Cams 29 are mounted on
95 the overhanging ends of the journals on which the spur-gears 8 are mounted and in position to engage the adjustable rollers on the rear ends of the discharge-levers. At the extreme
100 front ends of the discharge-levers rests 30 are

loosely mounted and are held in their lowermost positions by springs 31. The rests abut wedge-shaped stops 32, which are seated in similar bearings 33 and may be moved laterally with respect to the machine by means of a right-and-left screw 34. The stops may thus be adjusted to various heights, and thus vary the lowermost normal position of the gudgeons 23.

The operation of so much of the machine may now be understood. As shown in Fig. 1 the upper plungers are at their uppermost position and the lower plungers are at their lowermost normal positions. Continued rotation of the spur-gears 8 will draw the middle pivot 18 of the toggle rearwardly or tend to straighten the toggle. This will move the upper plungers downwardly until they engage the charge in the molds. Further downward movement of the upper plungers will occur, and consequently pressure will be exerted through the charge upon the lower plungers and compress the rest-springs 31 until the force exerted is equal to the weight of the upper link of the toggle and the parts suspended therefrom. Thereafter the upper pivot of the toggle will rise in its bearing and carry up with it the links 24 and the lower plungers. From this time until the toggle is again bent it is drawing the two sets of plungers toward each other. When the toggle is bending after the bricks are pressed, the cams 29 engage the rollers 28 on the rear ends of the discharging-levers 27, and thus raise the front ends thereof. The front ends of the discharging-levers, rising, carry the lower plungers upwardly. The extent of movement is arranged so that the lower plungers will rise until they are just flush with the tops of the molds. Then the bricks can be pushed out on the table 35 by the charger, which is about to be described.

In the rear of and above the molds a hopper 36 of any form is arranged. Beneath the hopper is a charger 37 of ordinary type, which is arranged to reciprocate over the tops of the molds to carry to them the charges of material to be pressed into bricks. The novelty of this portion of the mechanism lies in the means for reciprocating the charger.

Horizontal guide-bars 38 extend from the columns 3 rearwardly to the frame members 4 and are arranged at substantially the same height as the charger 37. Charger-bars 39 are connected at their front ends to the charger and on the outer faces of their rear ends carry guide-rollers 40, which run upon the guide-bars 38. Substantially V-shaped cams 41 are arranged upon the outer sides of the spur-gears 8 with the apexes toward the peripheries of the gears. The cams have an angular extent of a little more than ninety degrees. Upon the inner face of the rear end of each of the charger-bars 39 a roller 42 is mounted in position to be engaged by its re-

spective cam 41. The cams 41 and 29 are so arranged relatively to each other and the crank-pin 9 that the charger begins its forward movement just as the lower plungers reach their uppermost positions. The charger will then engage the bricks to be discharged and push them onto the table 35. Meanwhile the lower plungers are descending, and by the time the charger has reached its foremost position the molds can receive the charge. The charger is then moved rearwardly, and the pressing operation proceeds as described above.

Obviously my machine is capable of modification within the scope of my invention, and therefore I do not wish to be limited to the specific construction shown and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A brick-machine comprising a frame, a mold supported in said frame, upper and lower movable plungers forming the top and bottom of said mold, a floating toggle in said frame, means connecting said upper and lower plungers to the opposite ends of said toggle, respectively, an actuating-shaft, and a pitman directly connecting said shaft and the middle pivot of said toggle said pitman being supported only by said shaft and said middle pivot of said toggle.

2. A brick-machine comprising a frame, a mold supported in said frame, a toggle mounted in said frame, an upper plunger forming the top of said mold connected to one end of said toggle, a lower plunger forming the bottom of said mold, links connecting the free end of said toggle with said lower plunger, one end of each of said links being slotted, adjustable bearing-blocks arranged at the slotted ends of said links and adjustable with respect to said links, and means for actuating said toggle.

3. A brick-machine comprising a frame provided with open bearings near its top, a toggle mounted in said frame with its upper end pivot in said open bearings, a mold in said frame, a plunger forming the bottom of said mold, links connecting said plunger and said end pivot of said toggle, a plunger forming the top of said mold and connected to the lower end pivot of said toggle, an actuating-shaft in said frame, and a pitman directly connecting said shaft and the middle pivot of said toggle said pitman being supported only by said shaft and said middle pivot of said toggle.

4. A brick-machine, comprising a frame, a primary shaft journaled at the bottom of said frame and provided with pinions, spur-gears symmetrically mounted in said frame in position to mesh with said pinions, a crank-pin connecting said spur-gears, a mold in said frame, plungers forming the ends of said mold, a toggle operatively connected to said plungers and a pitman directly connecting said

crank-pin and the middle pivot of said toggle said pitman being supported only by said shaft and said middle pivot of said toggle.

5. A brick-machine comprising a frame, a mold in said frame, reciprocating plungers forming the top and bottom of said mold, means for actuating said plungers comprising spur-gears, a reciprocating charger for said mold, a guide-bar parallel with the direction of movement of said charger, mounted in and forming a part of said frame, a charger-actuating bar guided by said guide-bar and connected to said charger, an actuating-cam on one of said spur-gears, and means on said charger-bar engaging said cam.

6. A brick-machine comprising a frame, a mold in said frame, reciprocating plungers forming the top and bottom of said mold, means for actuating said plungers comprising rigidly-connected wheels, a reciprocating charger for said mold, guide-bars parallel with the direction of movement of said charger, mounted in and forming a part of said frame, actuating-cams mounted on said wheels and charger-actuating bars directly connected with

said charger and provided with rollers engaging said guide-bars and rollers engaging said cams.

7. A brick-machine comprising a frame, a mold supported in said frame, a toggle mounted in said frame, an upper plunger forming the top of said mold and connected to the lower end of said toggle, a lower plunger forming the bottom of said mold, links connecting the free end of said toggle and said lower plunger, one end of each of said links being slotted, an adjustable bearing-block mounted in the slot in each link, an actuating-shaft, and a pitman directly connecting said shaft and the middle pivot of said toggle, said pitman being supported only by said shaft and said middle pivot of said toggle.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of November, 1904.

WALTER P. GRATH.

Witnesses:

FRED F. REISNER,
J. B. MEGOWN.