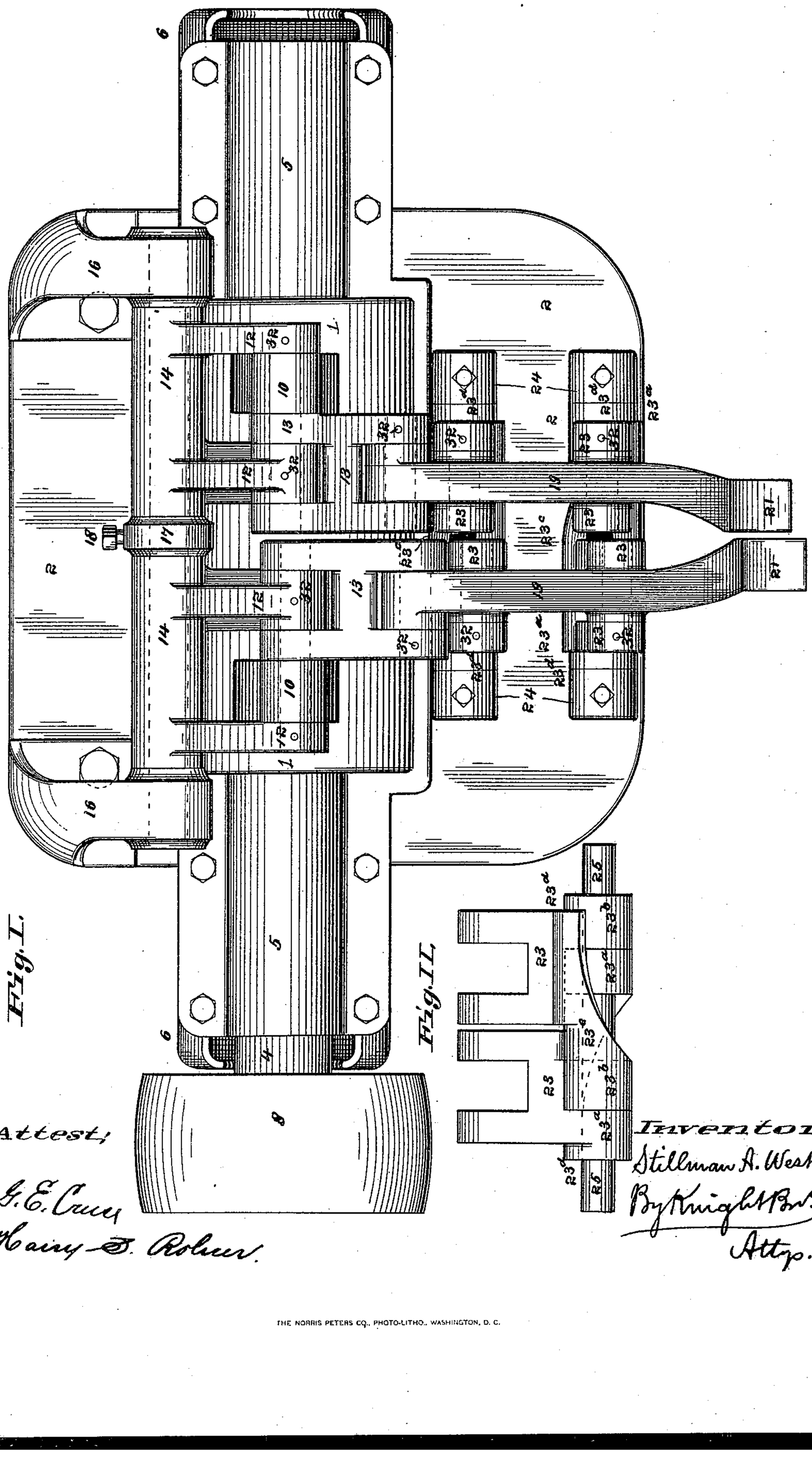
(No Model.) 3 Sheets—Sheet 1.

S. A. WEST.

SOLE HAMMERING MACHINE.

No. 493,199. Patented Mar. 7, 1893.



(No Model.) 3 Sheets—Sheet 2.

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SOLE HAMMERING MACHINE.

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Fig. III.

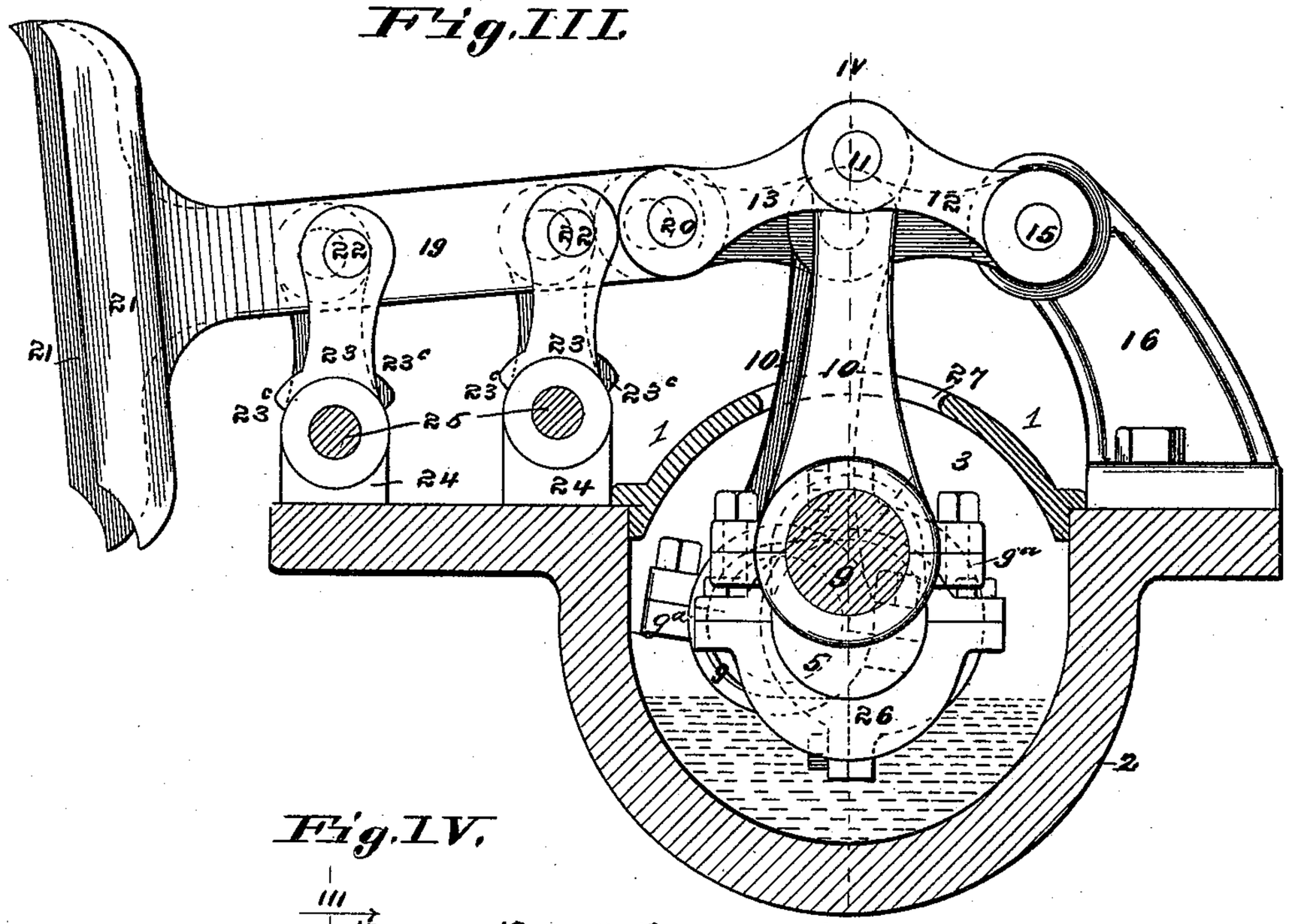
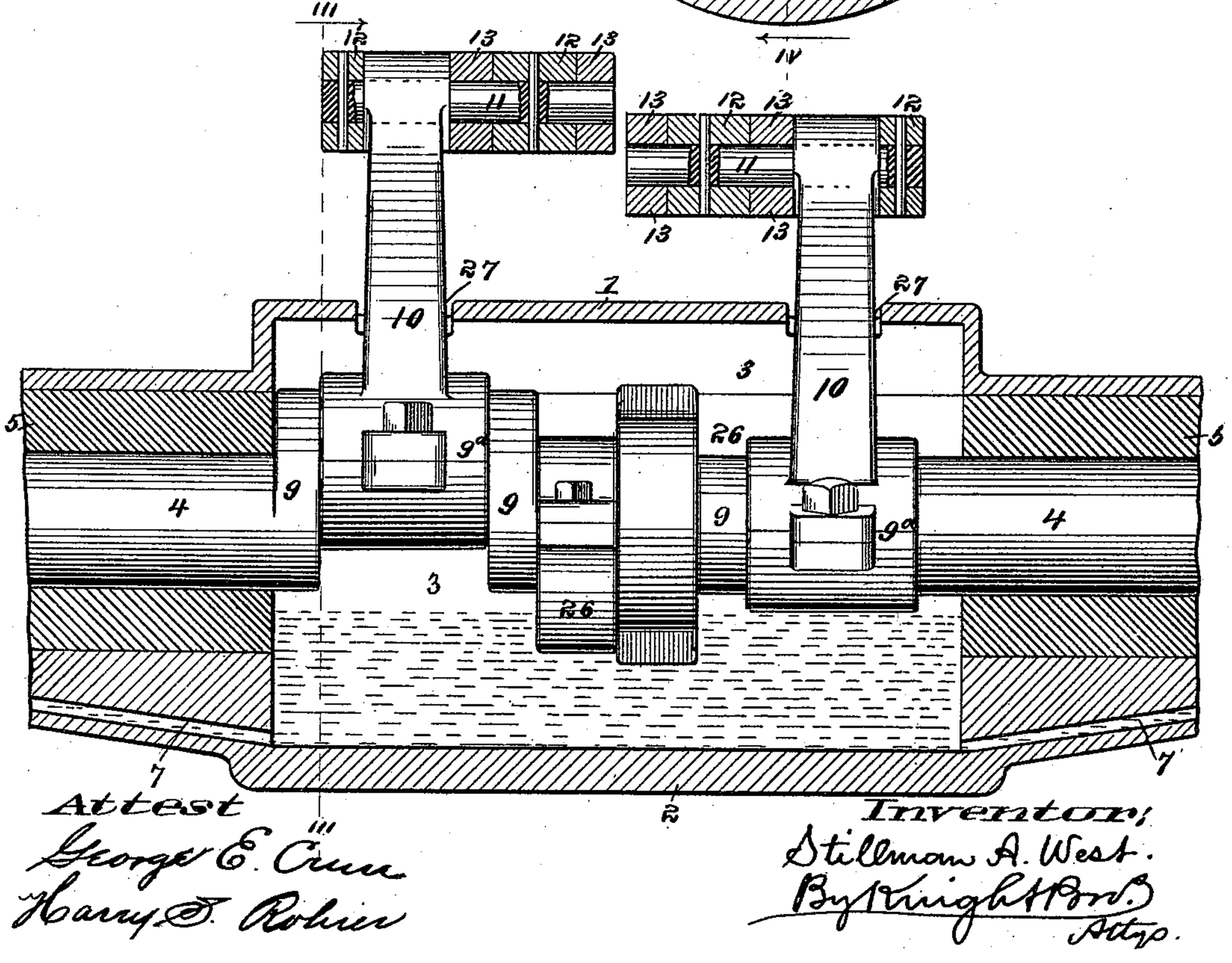


Fig. IV.



Attest
George E. Crum
Harry D. Robin

Inventor;
Stillman A. West.
By Knight Bros.
Attys.

(No Model.) 3 Sheets—Sheet 3.

S. A. WEST.

SOLE HAMMERING MACHINE.

No. 493,199. Patented Mar. 7, 1893.

Fig. V.

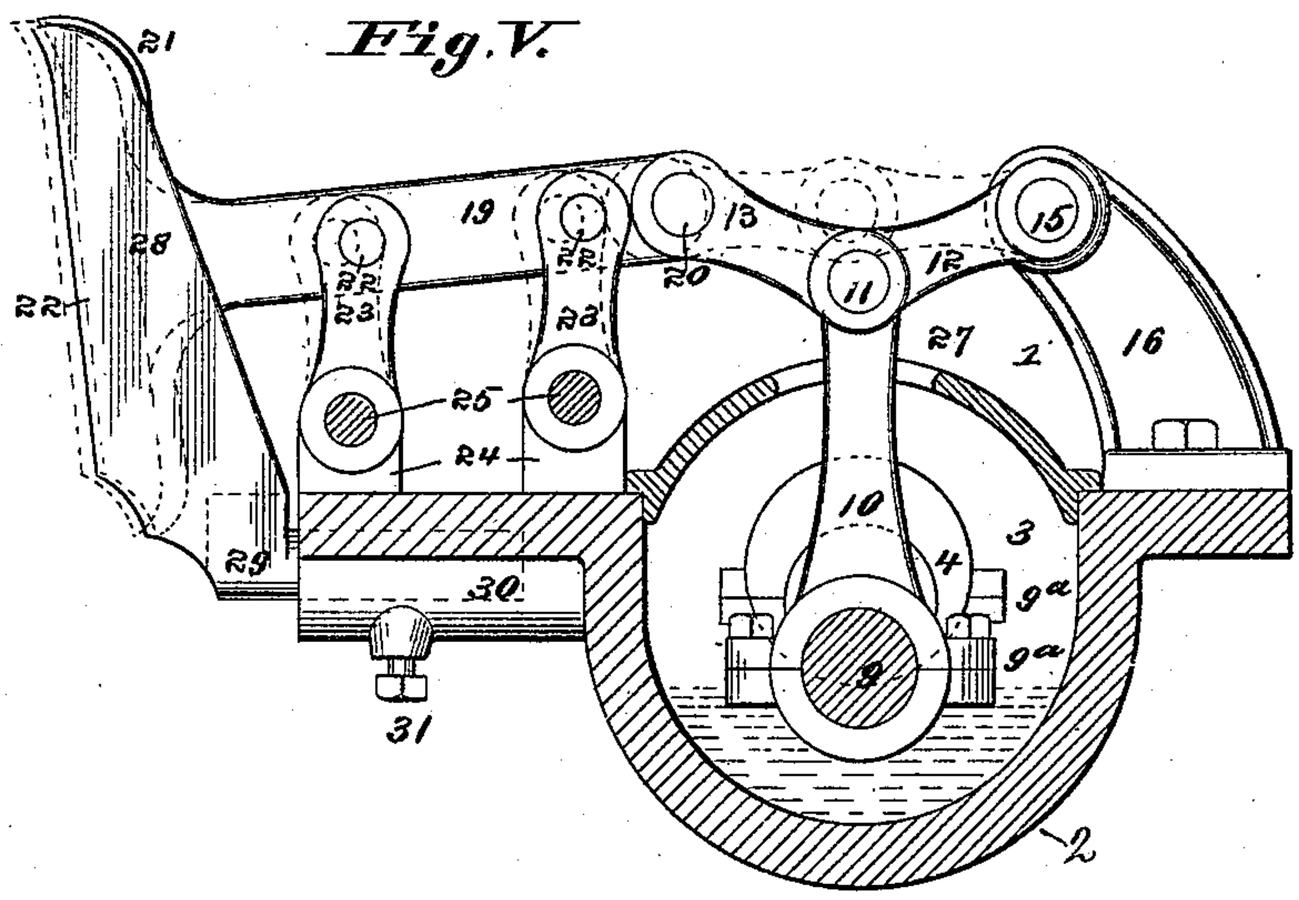
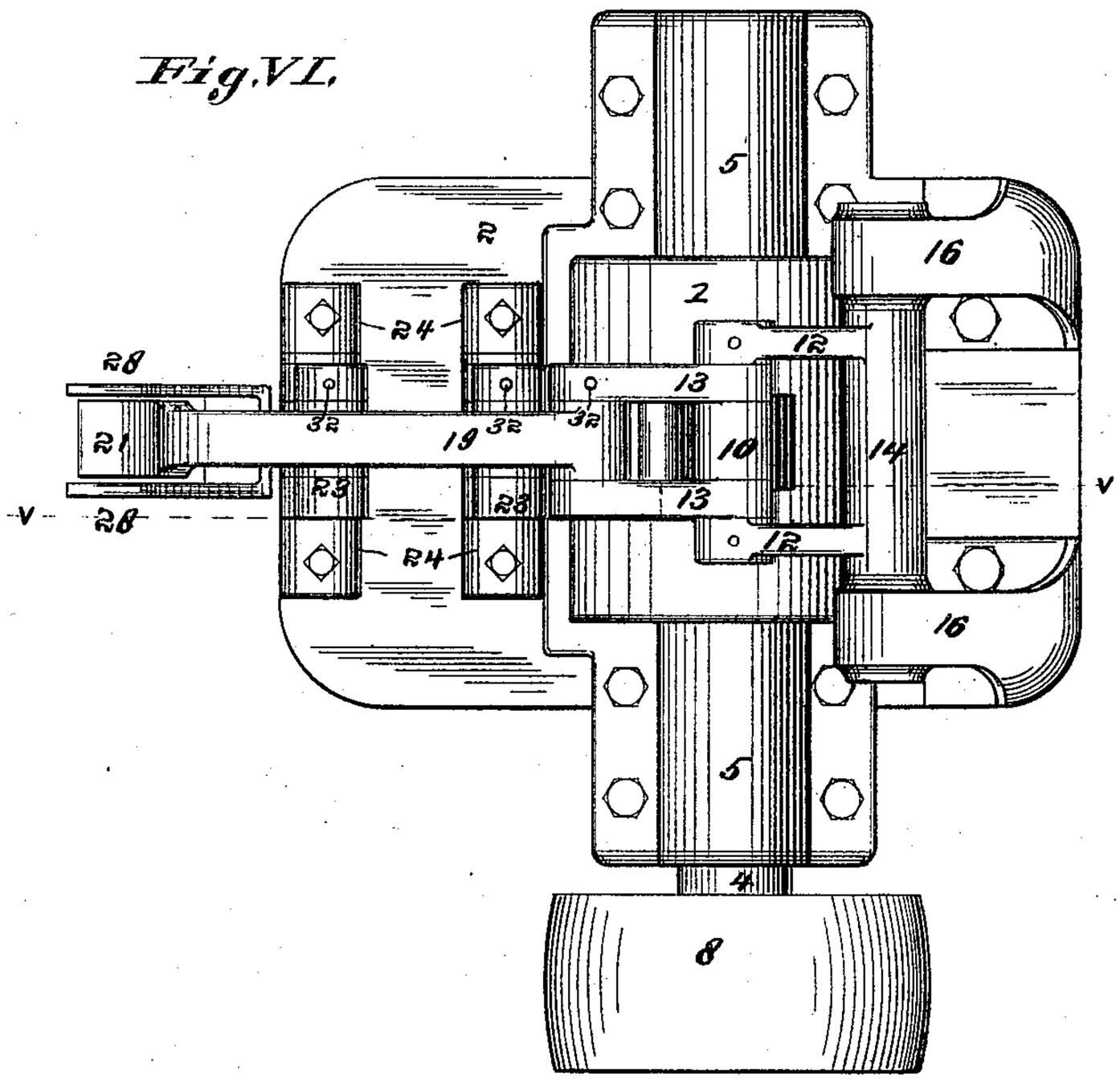


Fig. VI.



Attest:

George E. Curtis.

Harry E. Robinson.

Inventor:

Stillman A. West.

By Knight Bros.

Attys.

UNITED STATES PATENT OFFICE.

STILLMAN A. WEST, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO FRED L. CLARK, OF SAME PLACE.

SOLE-HAMMERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,199, dated March 7, 1893.

Application filed December 24, 1891. Serial No. 416,026. (No model.)

To all whom it may concern:

Be it known that I, STILLMAN A. WEST, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Machines for Leveling the Soles of Boots or Shoes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This is a machine by which blows following with extreme rapidity are given to the soles of shoes upon the last in the process of manufacture for the purpose stated.

The novel features will be set forth in the claims.

Figure I is a top view of the machine. Fig. II is a detail, front elevation of two of the links or arms by which the hammers are guided. Fig. III is a longitudinal section taken at III—III, Fig. IV. Fig. IV is a transverse section, taken at IV—IV, Fig. III. Fig. V is a longitudinal section of a modification taken at V—V, Fig. VI. Fig. VI is a top view of the modification in which rests are substituted for one of the hammers shown in Figs. I—IV, the means of driving and guiding the hammer being substantially the same in both cases.

The device as illustated in Figs. I to IV will be first described.

1 is a case having a base 2.

3 is an oil-chamber through which passes the crank-shaft 4 having bearings 5 at each side of the oil chamber. At the outer end of the journal bearings 5 are oil cups 6 from which extend conduits 7 leading to the oil chamber 3, so that any oil escaping from the bearings may be returned to the oil-chamber. The shaft 4 carries a belt pulley 8 by which it is turned.

9 are cranks on the shaft 4.

10 are upright crank-arms connected to the cranks by straps 9^a each arm being traversed at the upper end by the toggle pin 11. The cranks are set at right angles to each other, so that when either toggle is straight the other is in the condition of greatest flexion. The toggle pin passes also through the ends of the toggle arms 12 and of the toggle links 13. The toggle arms 12 are upon sleeves 14 rocking upon an arbor 15 having bearing in the standards 16.

17 is a collar fixed upon the arbor by a set screw 18.

19 are hammer-shanks of which there are two one connected to each of the toggle links by a pin 20, passing through the link and the shank.

21 are the hammers. Each of the shanks is connected by pins 22 with two links or arms 23 whose lower ends are pivoted to the standards 24 by pins 25. The links or arms 23 keep the face of the hammers at the same inclination in all positions so that it always strikes the sole at the same angle.

The movements of the hammers are exceedingly rapid, and it is necessary that they should be guided with little friction, and this end is attained by the use of links or arms 23.

26 are balance blocks upon the shaft 4 whose office is to counter-balance the cranks 9 and the parts attached thereto, so that the centrifugal force shall be balanced. This is requisite, because the speed shaft rotates at a high speed. The shaft and the cranks are lubricated by oil contained in the case 1, the cranks dipping into the oil at each downward movement. To prevent the splashing out of the oil, the case is closed, except at the slots or orifices 27 through which the arms 10 pass.

It will be seen that each hammer will deliver its stroke as the toggle to which it is connected becomes straightened out, and as this takes place twice for each rotation of the crank-shaft, it follows that there will be four blows given for each rotation of the shaft. The hammers will balance each other in their movements, and the crank shaft is balanced by the blocks 26 so that there is very little shaking to the machine even though the movements are very rapid.

In Fig. II is shown the preferred manner of connecting the links or arms 23 to the pin or arbor 25 on which they have bearing so as to brace them against transverse strain by setting the ears 23^a, 23^b a considerable distance asunder; for this purpose one of the ears upon each arm is upon a projection 23^c extending beneath the other arm, while the other ear extends beyond the arm in an extension 23^d, so as to lengthen the bearing upon the arbor 25.

The form of device shown in Figs. V and VI has a single hammer in which case it is advisable to have a guide or guides 28 (two

rests being shown) to arrest the forward movement of the shoe between the blows of the hammer. Such rest is not needed where two hammers are used, as each hammer performs the office of a rest for the other, arresting the backward movement of the shoe. The rest may be fixed to the body of the machine by a shank 29 entering a socket 30 and held in place by a set-screw 31. The former description applies to the form of the machine shown in Figs. V and VI except as to the single hammer and the rest or rests beside the hammer.

32 are key-pins passing through the pivot pins and the arms or other parts traversed by the pivot pins to hold the latter in place.

I claim as my invention—

1. The combination, in a machine for leveling shoe-soles, of a hammer, the pivoted links or arms connected to the hammer shank and forming guides therefor, the toggle 12, 13 connected at one end to the hammer shank, a crank and a crank arm 10 connected to the central joint of the toggle, substantially as set forth.

2. The combination, in a machine for leveling shoe soles, of the two hammers having simultaneous but opposite reciprocation the toggles connected at one end to the hammers and at the other to stationary bearings and a compound crank shaft having crank arms connected to the central joint of the toggles, substantially as set forth.

3. The combination, in a machine for leveling shoe-soles, of the two hammers, working side by side, the pivoted links or arms connected to the hammer shanks, the toggles connected to the hammer shanks, crank arms centrally connected to the toggles, and a crank shaft having cranks at right angles with each other, substantially as set forth.

4. The combination, in a machine for leveling shoe-soles of the two hammers having simultaneous reciprocation in opposite directions, thus balancing each other, toggles connected to the hammers pivoted links or arms, crank-arms 10 centrally connected to the toggles and strapped to cranks 9 upon a single shaft and balance blocks 26 on the shaft, all substantially as set forth.

5. The combination in a sole-leveling machine, with two guide-arms 23, pivoted on a single arbor; of the inner bearings 23^a and 23^b of each guide-arm respectively located beyond said bearing of the other guide-arm, in direction of the other guide-arm, substantially as set forth.

6. The combination of the support the standards, the hammer having a shank, the links pivoted to the support and to the shank, the toggle pivoted to the standards and to the shank, the shaft having a crank, and the upright crank-arm mounted loosely on the crank and pivoted to the central pivot of the toggle; substantially as described.

STILLMAN A. WEST.

In presence of—
SAML. KNIGHT,
BENJN. A. KNIGHT.