

(No Model.)

2 Sheets—Sheet 1.

B. OAKES.
ANIMAL SHEARS.

No. 550,082.

Patented Nov. 19, 1895.

Fig. 1.

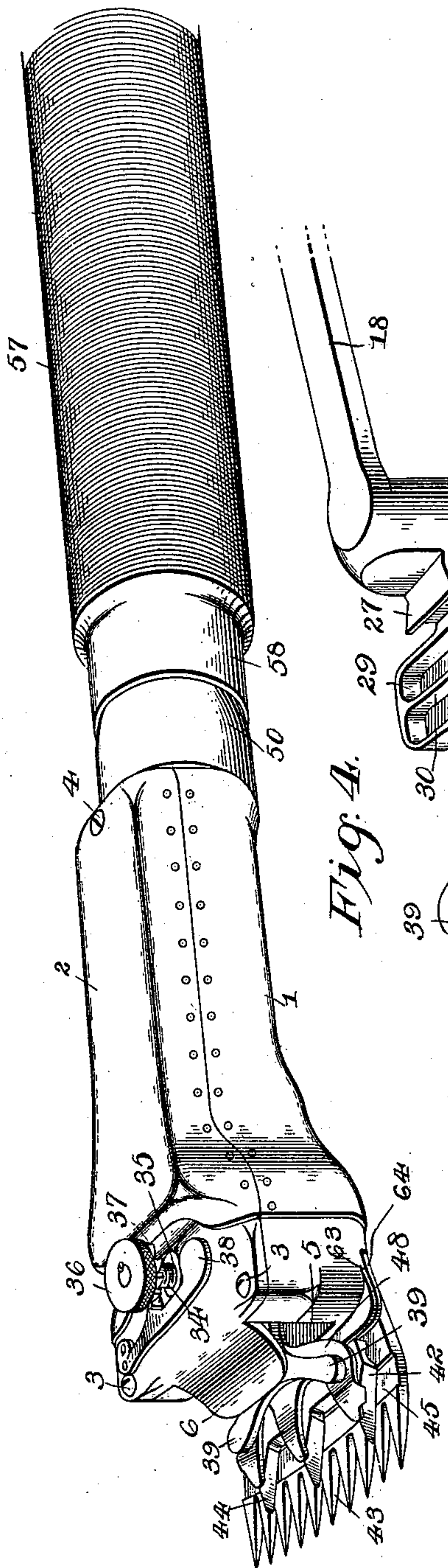


Fig. 4.

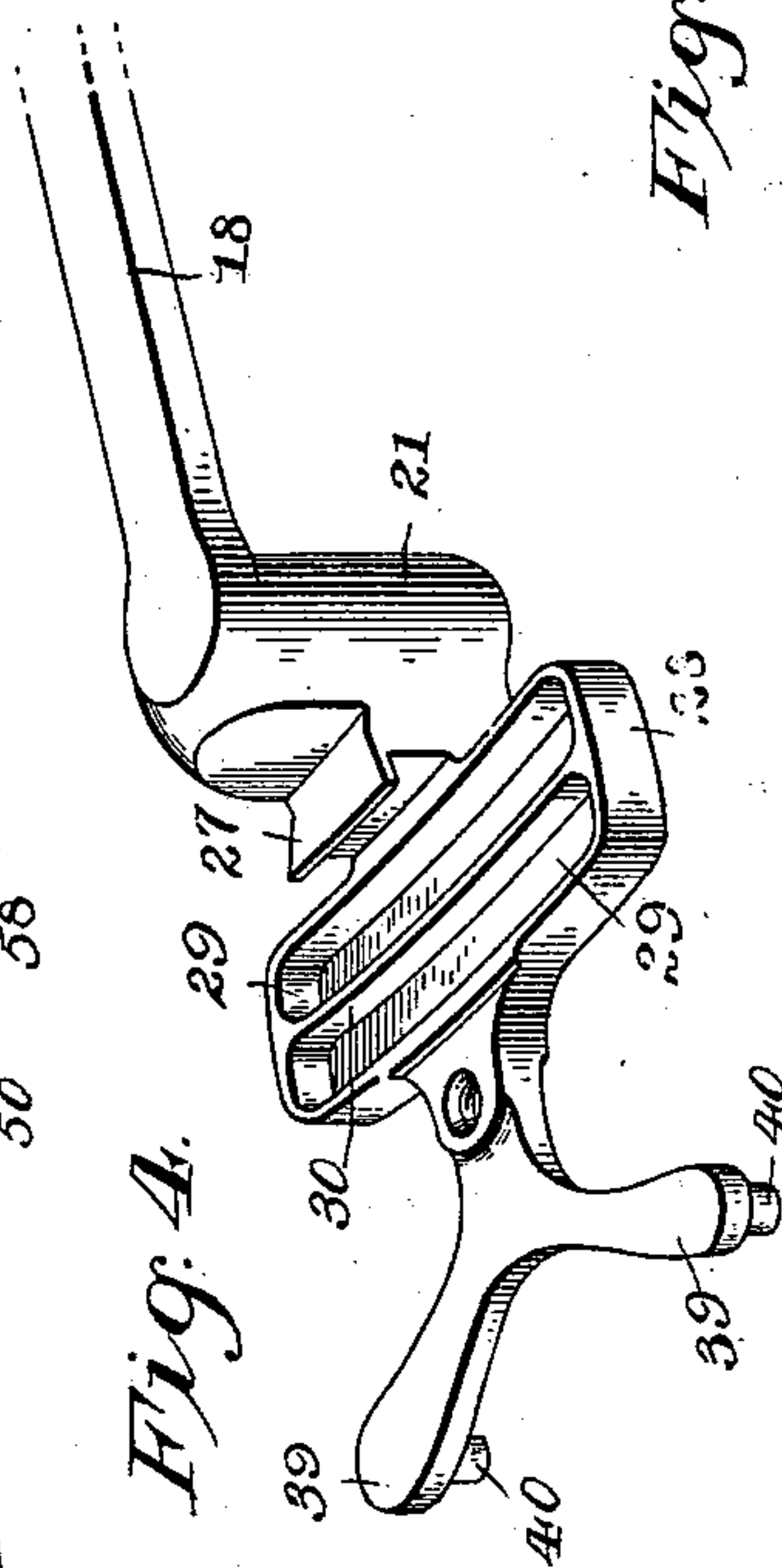


Fig. 6.

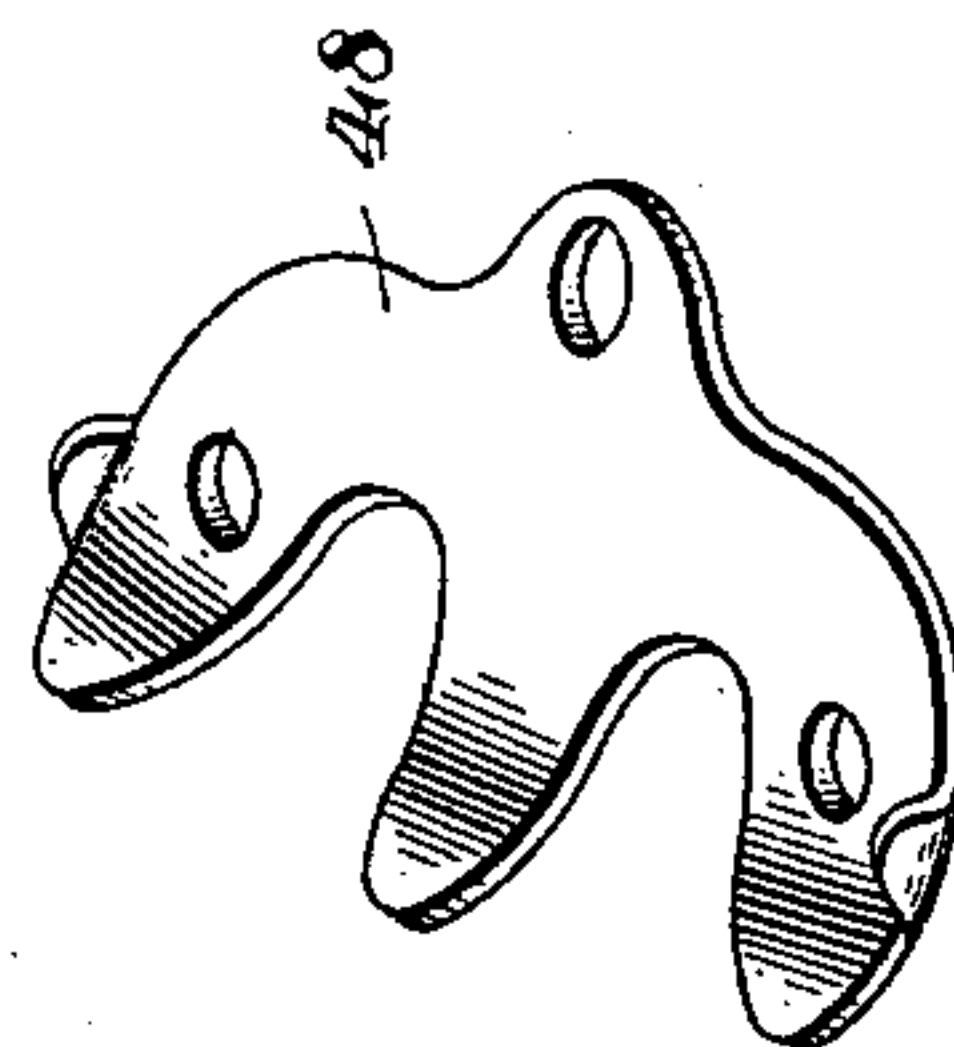


Fig. 8.

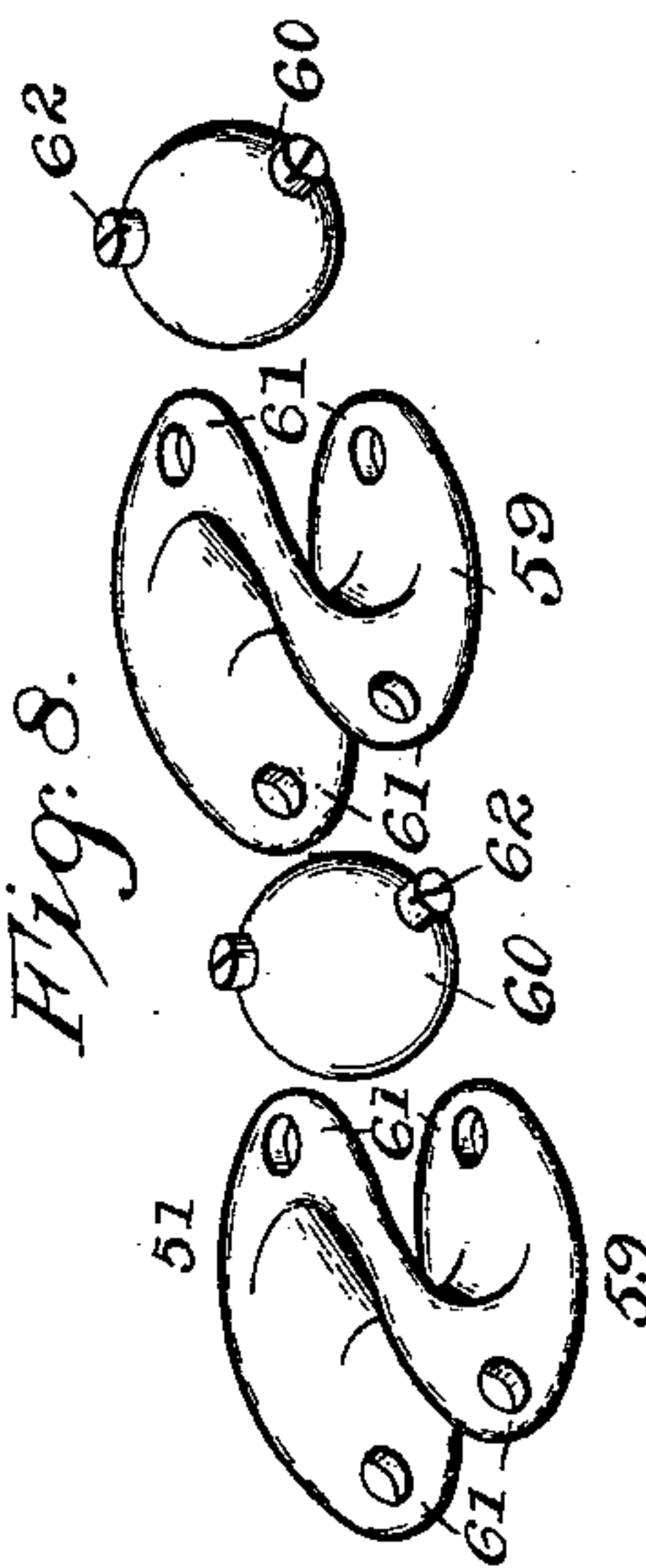
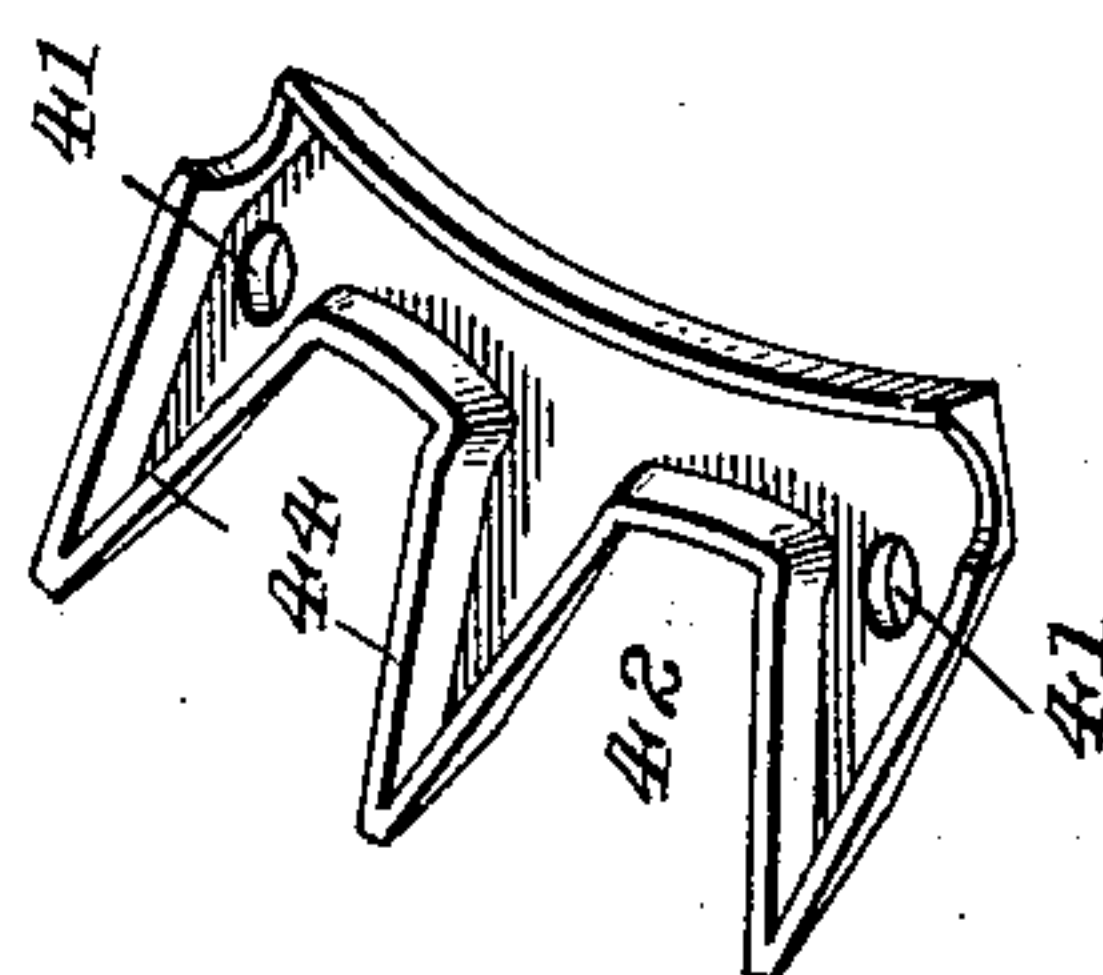


Fig. 5.



Inventor

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Witnesses

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By his Attorneys,

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

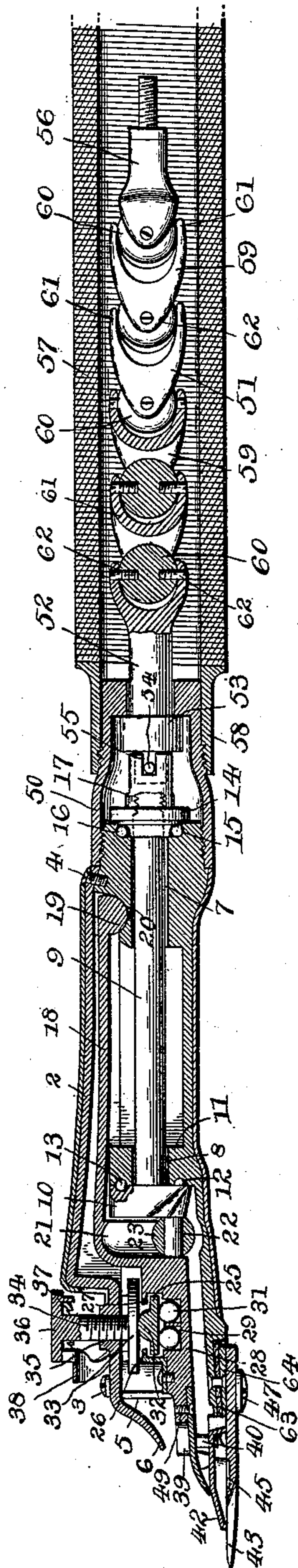


Fig. 7.

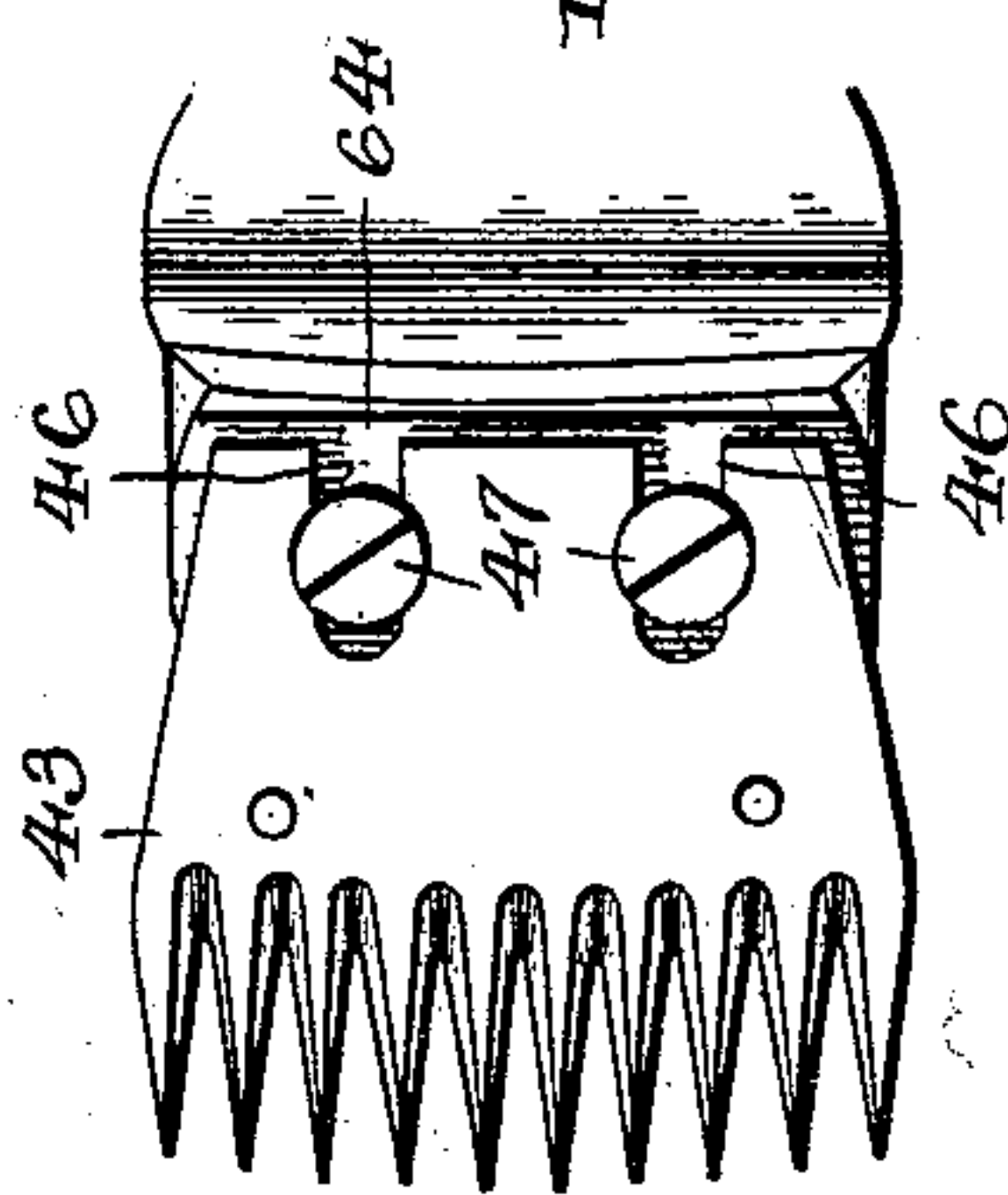
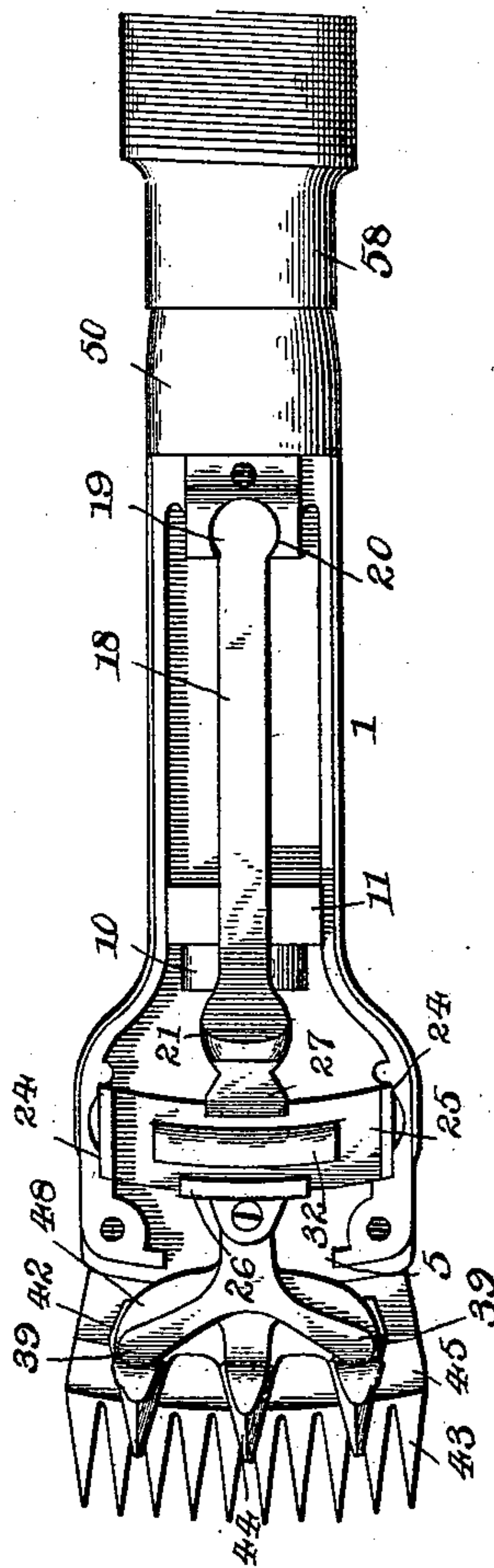


Fig. 3.



Inventor

Ben Oakes,

Witnesses

Charles Ford

[Signature]

By his Attorneys,

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UNITED STATES PATENT OFFICE.

BEN OAKES, OF CHICAGO, ILLINOIS.

ANIMAL-SHEARS.

SPECIFICATION forming part of Letters Patent No. 550,082, dated November 19, 1895.

Application filed November 23, 1894. Serial No. 529,769. (No model.)

To all whom it may concern:

Be it known that I, BEN OAKES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Sheep-Shearing Apparatus, of which the following is a specification.

My invention relates to sheep-shearing devices, and the objects in view are to provide
10 simple and improved means for communicating the rotary motion of a continuously-operating shaft to a reciprocatory cutter or comb to operate in conjunction with a stationary cutter or comb, to provide improved means
15 for regulating the pressure of the movable cutter or comb upon the face of the stationary cutter or comb, and, furthermore, to provide an improved flexible shaft for communicating motion from the said continuously-
20 rotating driving-shaft to the spindle of the cutting apparatus.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be
25 particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a sheep-shearing apparatus embodying my invention. Fig. 2 is a longitudinal
30 central section of the same. Fig. 3 is a plan view with the cap-plate removed. Fig. 4 is a detail view in perspective of the front portion of the oscillating arm. Fig. 5 is a similar view of the movable cutter or comb. Fig. 6
35 is a similar view of the pressure-spring. Fig. 7 is a partial bottom plan view. Fig. 8 is a detail view of a portion of the flexible shaft with the parts detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.
40

1 designates a casing, which is exteriorly shaped to form a convenient hand-hold and is provided with a removable cap-plate 2, secured in place at its front end by the screws
45 3 and at its rear end by the screw 4. The casing is provided at its front end with an opening 5, for a purpose hereinafter explained, and the cap-plate is provided with a downwardly and forwardly projecting apron or
50 guard 6, which partially covers said opening to prevent detached wool from being pushed into the casing.

In bearings 7 and 8, located, respectively, at the rear end and at an intermediate point
55 of the casing, is a rotary spindle 9, provided at its front end with a disk 10, which is contiguous at its rear side with the front side of a block or partition 11, in which the bearing
60 8 is formed. The rear face of said disk and the front surface of the block or partition are channeled to form a seat 12, in which are arranged the antifriction-balls or spherical rollers 13. An adjustable disk 14 is fitted upon
65 the rear end of the spindle, and the contiguous faces of said disk and the rear end of the casing are channeled to form a seat 15 for the reception of the antifriction-balls or spherical rollers 16, said adjustable disk being held
70 in place by means of a tip 17, which is threaded upon the extremity of the spindle and bears against the rear surface of said disk. By means of this tip any lost motion caused by wear or by expansion or contraction may be
75 taken up.

The oscillatory arm 18 is provided at its rear end with a knob 19, fitting in a spherical socket 20, formed in the casing above the rear spindle-bearing 7, and in front of the disk
80 which is fixed to the front end of said spindle said arm is provided with a vertical guide or way 21 for the reception of a pin 22 projecting from the front surface of said fixed disk. Preferably mounted upon this pin is
85 a ball or spherical roller 23, to travel in the guide or way and during the rotation of the spindle communicate a lateral motion to the front end of the oscillatory arm. Fitted at its ends in vertical channels 24, formed in the
90 side walls of the casing in advance of said guide or way, is a guide-plate 25, segmental in form, to lie concentric with the fulcrum-point of the oscillatory arm, and the said arm is provided with front and rear clips 26 and
95 27 to engage the front and rear edges of said guide-plate, and the front clip 26 is removable to facilitate the separation and assembling of the parts. Below the plane of the guide-plate the oscillatory arm is provided
100 with an enlargement 28, provided in its upper surface with parallel arc-shaped seats 29, separated by a partition 30, and containing antifriction balls or rollers 31 to bear against the under surface of the guide-plate, and the latter is provided upon its upper surface with a
105 raised rib 32 to receive the pressure of a press-

ure-disk 33 on the lower end of an adjusting-screw 34. This adjusting-screw is threaded in an opening 35 in the cap-plate and terminates at its upper end in a milled head 36, provided upon its under surface with ratchet-teeth 37 for engagement by a spring-pawl 38. The oscillatory arm terminates at its front end in fingers 39, provided with depending pins 40, which engage sockets or openings 41 in the movable cutter or comb 42, said movable cutter or comb being mounted upon the upper surface of a stationary cutter or comb 43. The movable cutter or comb is hollow, including the knives or teeth 44, said knives or teeth being tapered in section toward their upper sides, whereby the friction due to the rapid reciprocation thereof upon the surface of the lower or stationary cutter or comb has the effect of sharpening the knives or teeth. The knives or teeth of the lower or stationary cutter or comb are tapered in section toward their lower sides to present plain upper surfaces for contact with the movable cutter or comb, and hence the lower knives or teeth are also sharpened by wear. The upper surface of the stationary cutter or comb in rear of the bases of the knives or teeth thereof is provided with a channel or groove 45, adapted for the reception of oil and also designed to provide clearance for the cutters or combs, to prevent detached wool from crowding between and separating said cutters or combs. The lower cutter or comb is provided at its rear end with longitudinal slots 46 for engagement by the set-screws 47, whereby said cutter or comb may be adjusted forwardly or rearwardly, as required, and in order to preserve an even and effective pressure of the movable cutter or comb upon the stationary cutter or comb I employ a pressure-spring 48, interposed between the fingers at the front end of the oscillatory arm and the upper side of said movable cutter or comb. The spring is provided with a series of tongues corresponding in number with the knives or fingers of the movable cutter or comb, and by adjusting the pressure-plate to cause more or less depression of the guide-plate the tension of the spring may be regulated as desired. The spring is held in place by means of the depending pins at the extremities of the fingers of the oscillatory arm and a screw 49, which is arranged at its center and engages the said arm. Threaded exteriorly upon the rear end of the casing is a thimble 50, in the outer end of which is mounted one terminal of a flexible shaft 51, said terminal 52 being provided within the thimble with a collar 53, to bear against the extremity of the tip on the rear end of the spindle, and a cross-head or pin 54 to engage a transverse notch or slot 55 in said tip. The terminal 56 at the opposite end of said flexible shaft is adapted to be connected in any suitable or approved manner to a driving-shaft (not shown) and the flexible shaft is inclosed and protected by a flexible sheath 57,

constructed of continuously-coiled wire, and provided at one end with a sleeve 58, which is threaded exteriorly upon the rear reduced end of the thimble. The flexible shaft is constructed of a series of detachable members or sections 59, connected in series by means of interposed balls or spheres 60. Each member or section of the flexible shaft is provided at each end with twin oppositely-disposed cheeks 61, the cheeks at one end of the member or section being disposed in planes at right angles to those at the other end, and these cheeks are alternately disposed with relation to those of the contiguous members or sections and are connected to the spheres by means of pivot pins or screws 62, also disposed, respectively, in planes at right angles to each other. This construction provides universal joints between adjacent members or sections of the flexible shaft, and hence provides for the communication of motion from one terminal of the shaft to the other, irrespective of the relative positions of the members or sections. Thus the operator may move the casing, as desired, to suit the position and shape of the sheep or other animal without interfering with the communication of motion from a driving-shaft to the spindle.

From the above description it will be seen that the cheeks of one section operate between the planes of the cheeks of the adjoining section, and thus allow said sections to assume an angular position, but the relative arrangement of parts prevents the sections from assuming positions at right angles to each other, such a position preventing the transmission of motion from one section to the next. In order to prevent this disposition of the adjoining sections at right angles to each other, the interval between the cheeks is concaved and rounded to follow approximately the contour of the sphere and is located sufficiently near to the surface of the sphere to prevent the extremities of the cheeks from passing therebetween. Thus, the concave surface between the opposite cheeks at one end of a section forms a stop for contact with the extremities of the cheeks of the adjoining section. Inasmuch as the pivot pins or screws are located at the extremities of the diameters of the sphere, the extremities of the cheeks must extend beyond the diameters, and hence the sections cannot be arranged in positions at right angles to each other. The pivot-screws which I employ for securing the members of the chain together provide for the detachment thereof with facility to simplify the operation of repairing or replacing parts.

This being the construction of the improved apparatus, it will be understood that the parts may be readily separated and reassembled, to provide for cleaning, repairing, or replacing the worn parts; that the antifriction-bearings provided at the points which are exposed to the greatest wear insure rapidity and accuracy of movement, the construction of the knives or teeth of the cutters or

combs cause the cutters or combs to be self-sharpened, and the hollow movable cutter or comb, in conjunction with the channel in the upper surface of the stationary cutter or comb, provides clearance for the parts and prevents choking by detached wool.

In devices of this class, unless means are provided for preventing it, heat passes from the fixed cutter or comb to the casing or handle to such an extent that the latter cannot be held in the hand, thus rendering the continued use of the apparatus inconvenient, if not impossible; and in order to prevent such conduction of the heat I employ a non-conducting packing or insulating sheet 63, which is held in place in contact with the casing by means of a securing-plate 64, which may be considered a part of the case, inasmuch as it is employed simply to protect the packing or sheet, and to this plate 64 the stationary cutter or comb is secured. The insulating-sheet may be made of asbestos or other equivalent material, and it prevents a passage of heat from the cutter or comb to the casing or handle, and thereby provides for a continued use of the apparatus without inconvenience, and at the same time by preventing the heat from passing to the casing the mechanism within the latter is protected from the effect of heat. In order to provide for the insertion of the heat-insulating sheet 63, I preferably cut away or rabbet the under surface of the contiguous portion of the casing, and the rivet by which said insulating-sheet is held in place extends through the securing-plate 64 and the floor of the rabbet.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, I claim—

1. The combination with a casing, a spindle mounted longitudinally therein, and means for communicating motion to the spindle, of an oscillatory-arm fulcrumed at its rear end to the casing and connected at its front end to a movable cutter or comb co-operating with a stationary cutter or comb, an enlargement of said arm being provided in its upper side with twin parallel seats, anti-friction balls or rollers mounted in said seats, a guide plate bearing upon said anti-friction balls or rollers and fitting at its ends in vertical channels in the casing, clips carried by the arm to engage the front and rear edges of said guide plate, one of said clips being removable, means for depressing said guide-plate, and connections between the spindle and the oscillatory-arm, substantially as specified.

2. The combination with a casing, of a stationary cutter or comb, a reciprocatory cutter or comb, an oscillatory arm provided at its free end with transverse seats, anti-friction rollers arranged in the seats, a guide-plate bearing upon the rollers, means for ad-

justing the pressure of the guide-plate, connections between the arm and the oscillatory cutter or comb, and means for operating the arm, substantially as specified.

3. A flexible shaft having detachable members or sections connected by universal joints, each member or section being provided at opposite ends with duplicate spaced cheeks, the cheeks at one end being perpendicular to the planes of those at the other end, and spheres interposed between adjacent members of sections and arranged between said cheeks to which they are connected by means of pivot-pins arranged in pairs at diametrically opposite points, the surfaces of the members or sections between the cheeks being arranged to follow the contour of the spheres and thereby form stops for contact with the extremities of the cheeks of adjoining sections to limit the relative deflection thereof, substantially as specified.

4. A flexible shaft comprising members or sections connected by universal joints, each member or section being provided at opposite ends with duplicate spaced cheeks, the cheeks at one end being arranged perpendicular to the planes of those at the other end, spheres interposed between adjacent members or sections and arranged between said cheeks, the cheeks of adjoining sections being arranged in perpendicular planes, and threaded pivot-pins extending through the cheeks and engaging the spheres at diametrically opposite points whereby the parts of the shaft may be readily disassembled, each member or section being provided with means for engaging the extremities of the cheeks of an adjoining section to prevent adjoining sections from assuming positions at right angles to each other, substantially as specified.

5. The combination with a casing, a stationary cutter or comb, a spindle mounted in the casing, a movable cutter or comb, and connections between said spindle and the movable cutter or comb, of a thimble threaded upon the rear end of the casing, and provided at its rear extremity with a bearing, a flexible-shaft having one terminal mounted in said bearing at the rear end of the thimble and provided with a cross-head or pin to engage a transverse notch or slot in the contiguous end of said spindle, a collar arranged in contact with the bearing to prevent disengagement of the cross-head or pin from the notch, a sleeve threaded exteriorly upon the thimble and a flexible sheath of continuously coiled wire inclosing the flexible-shaft, and attached to said sleeve, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BEN OAKES.

Witnesses:

ALFRED E. HART,
E. PUMPHREY.