

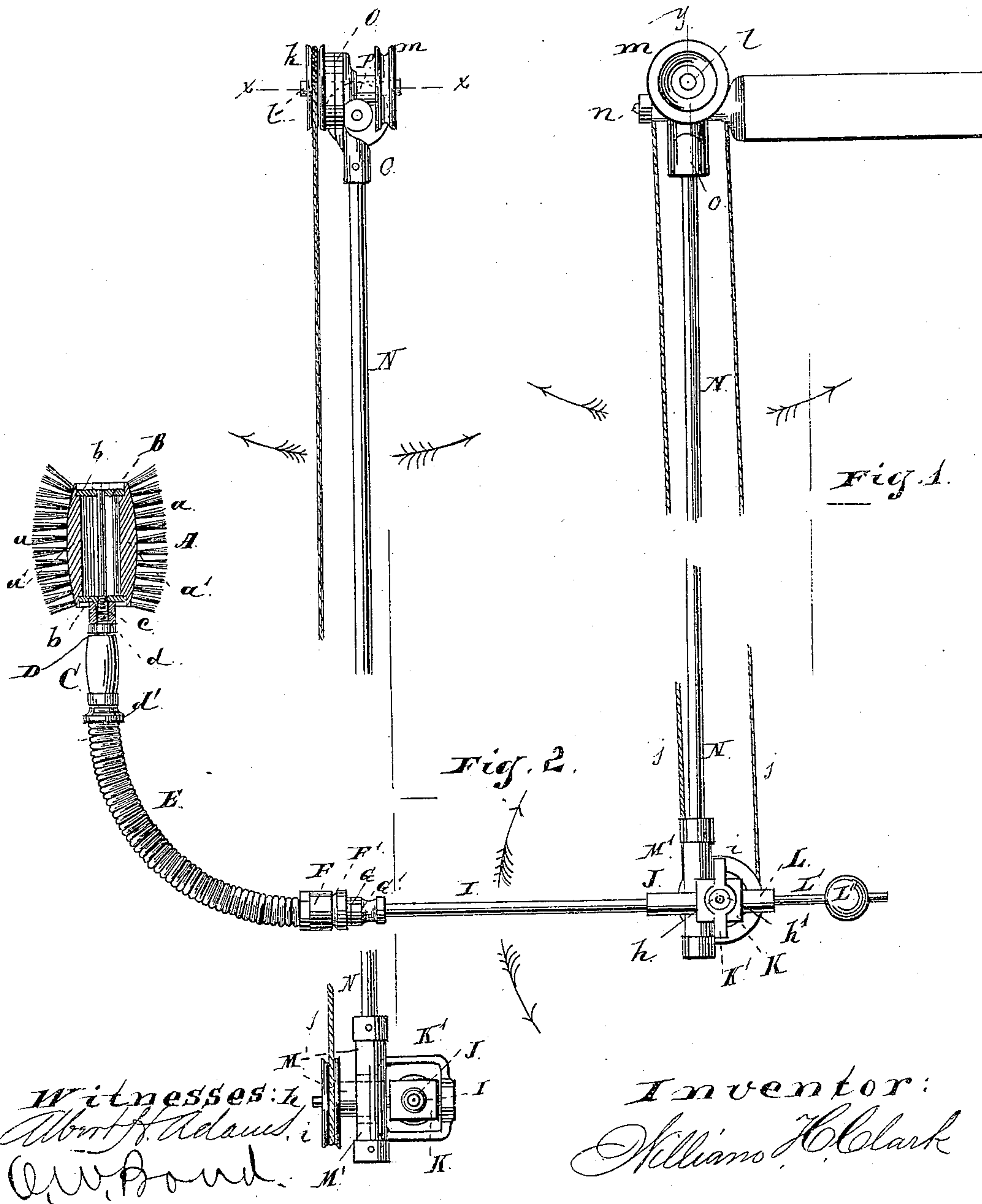
(No Model.)

4 Sheets—Sheet 1.

W. H. CLARK.
GROOMING MACHINE.

No. 270,389.

Patented Jan. 9, 1883.



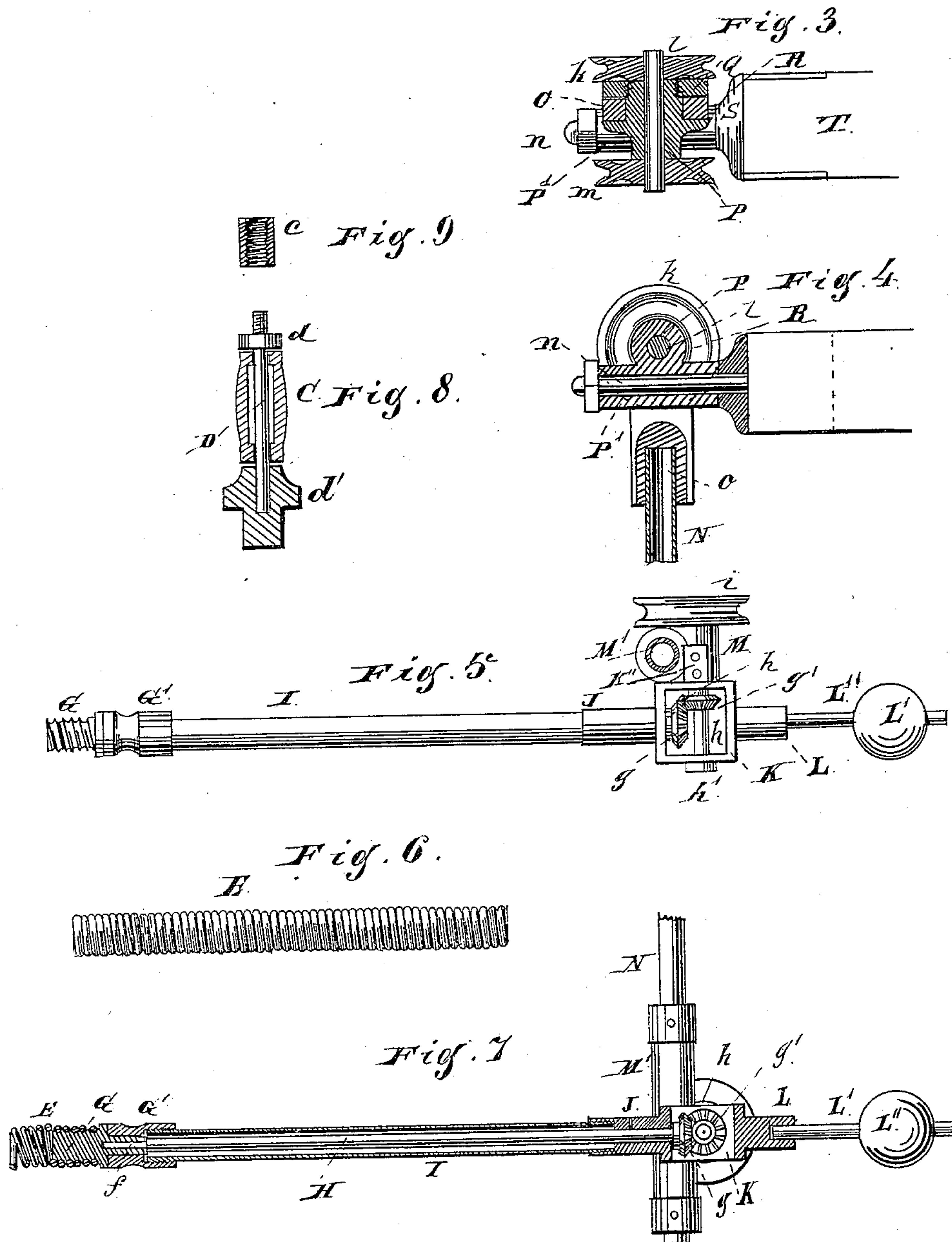
(No Model.)

4 Sheets—Sheet 2.

W. H. CLARK.
GROOMING MACHINE.

No. 270,389.

Patented Jan. 9, 1883.



Witnesses:
Albert H. Adams
A. W. Bond

Inventor:
William H. Clark

4 Sheets—Sheet 3.

No. 270,389.

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Fig. 12.

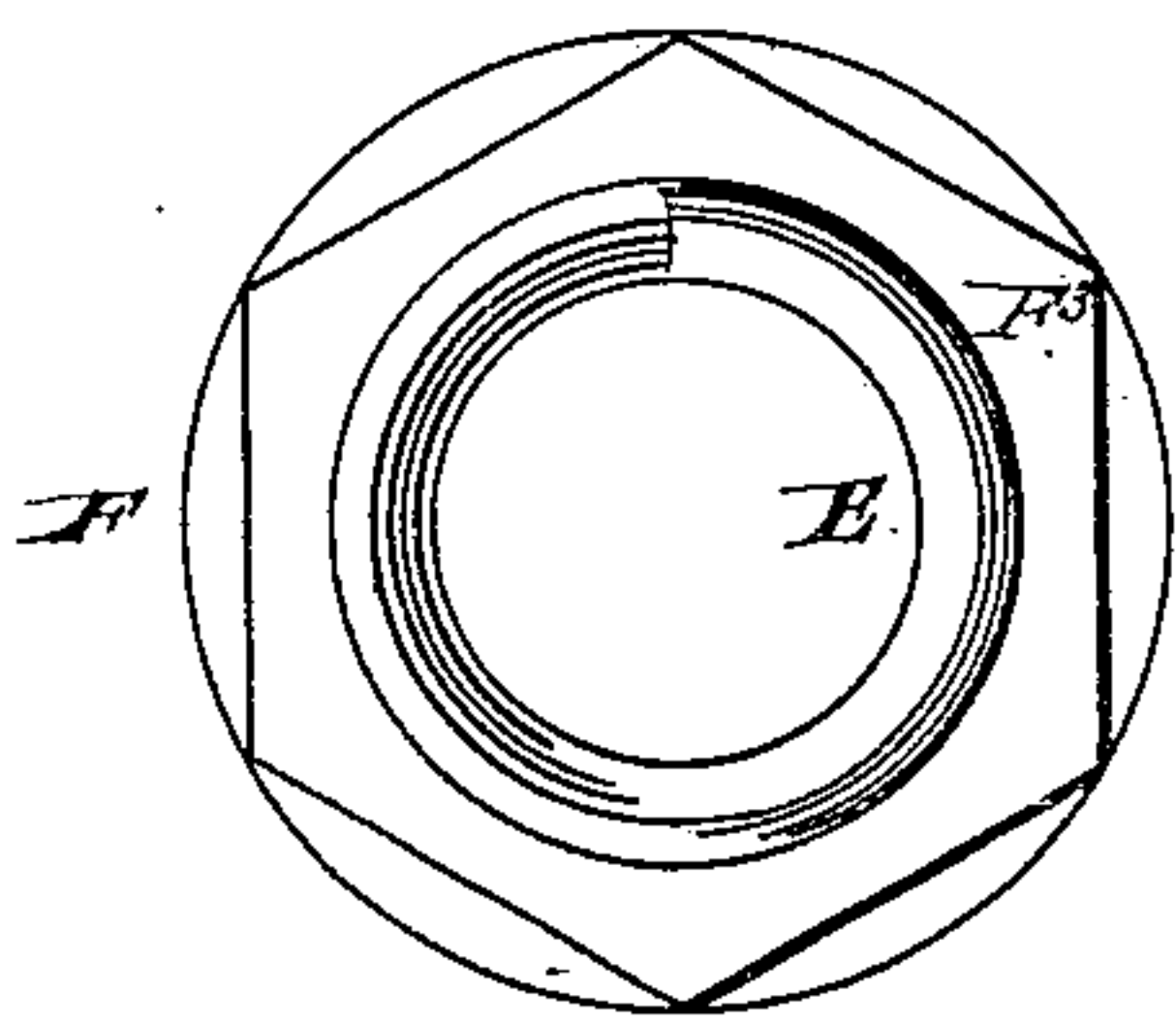


Fig. 10.

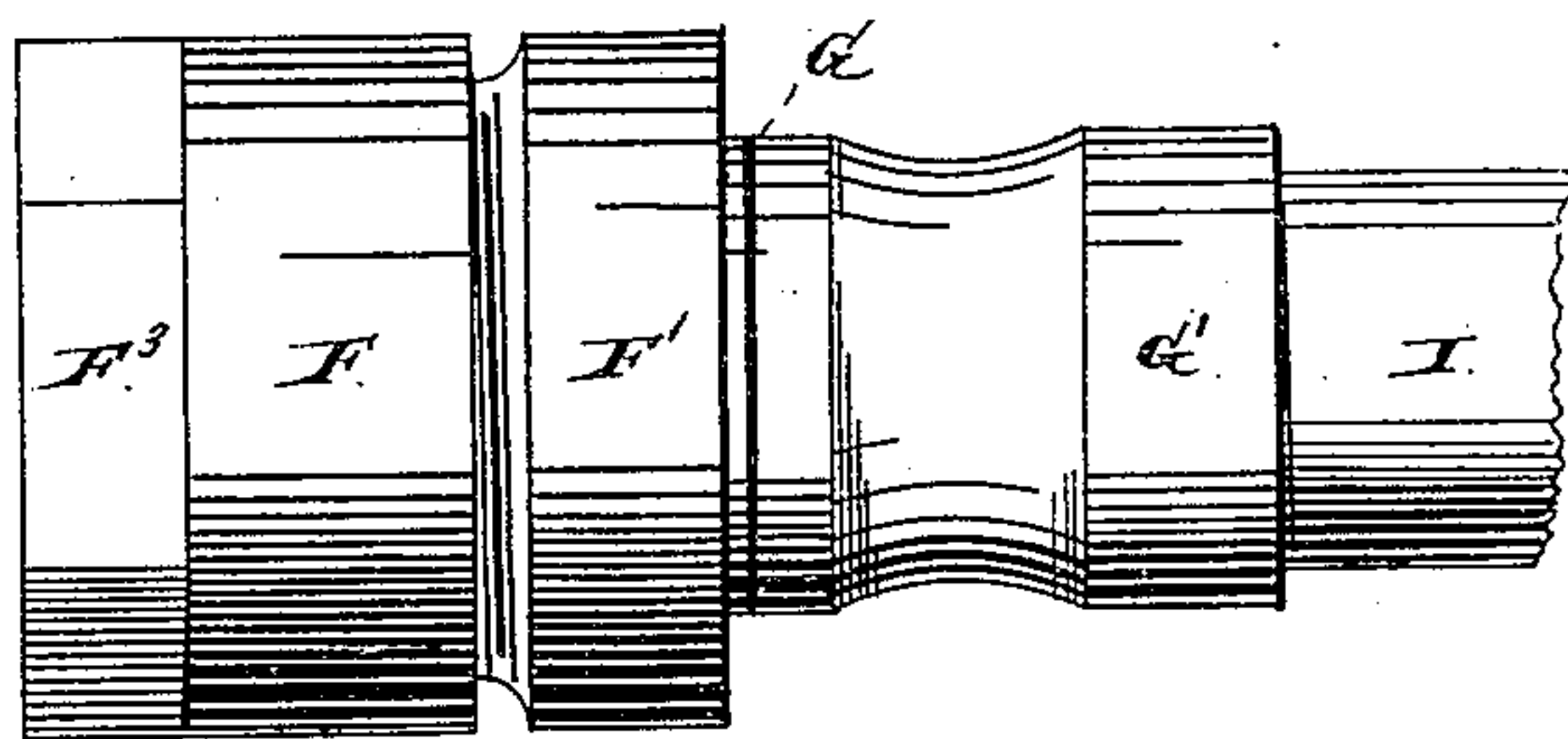


Fig. 11.

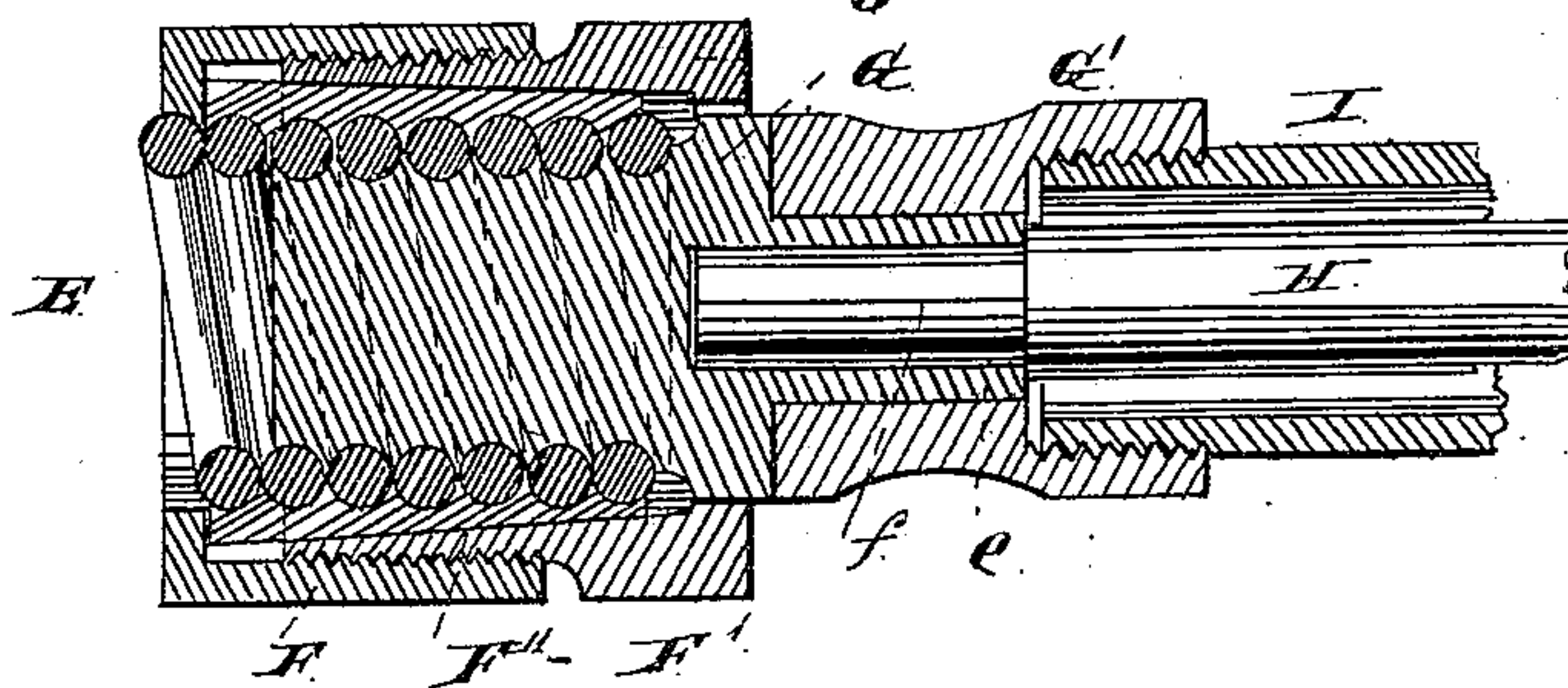


Fig. 13.

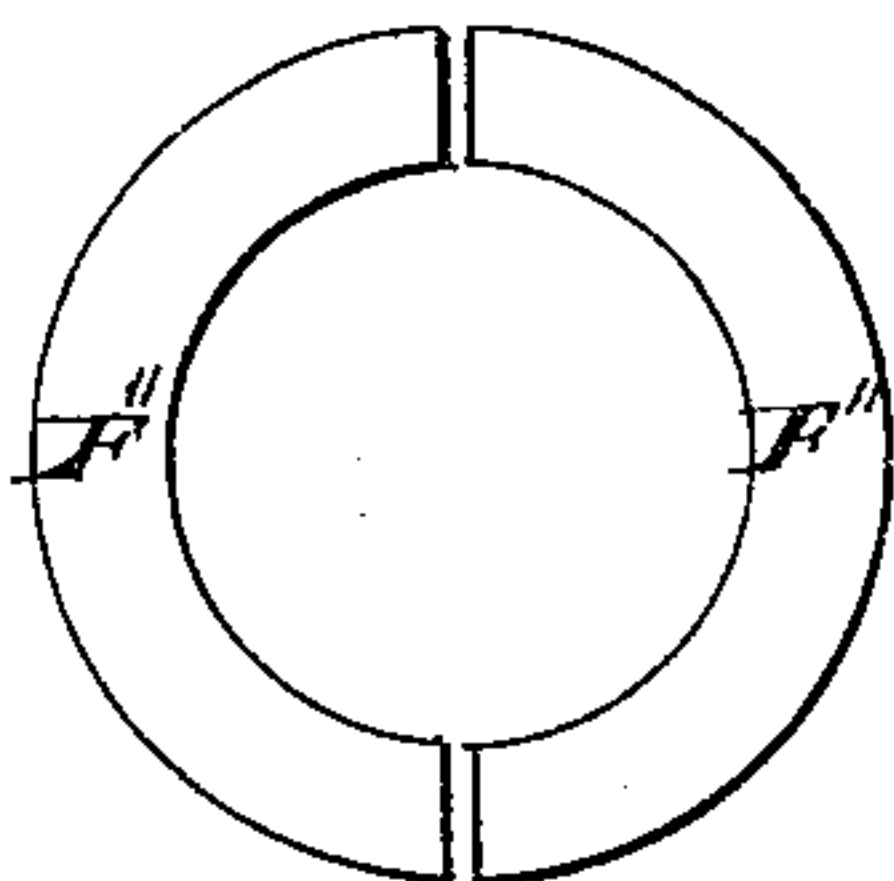
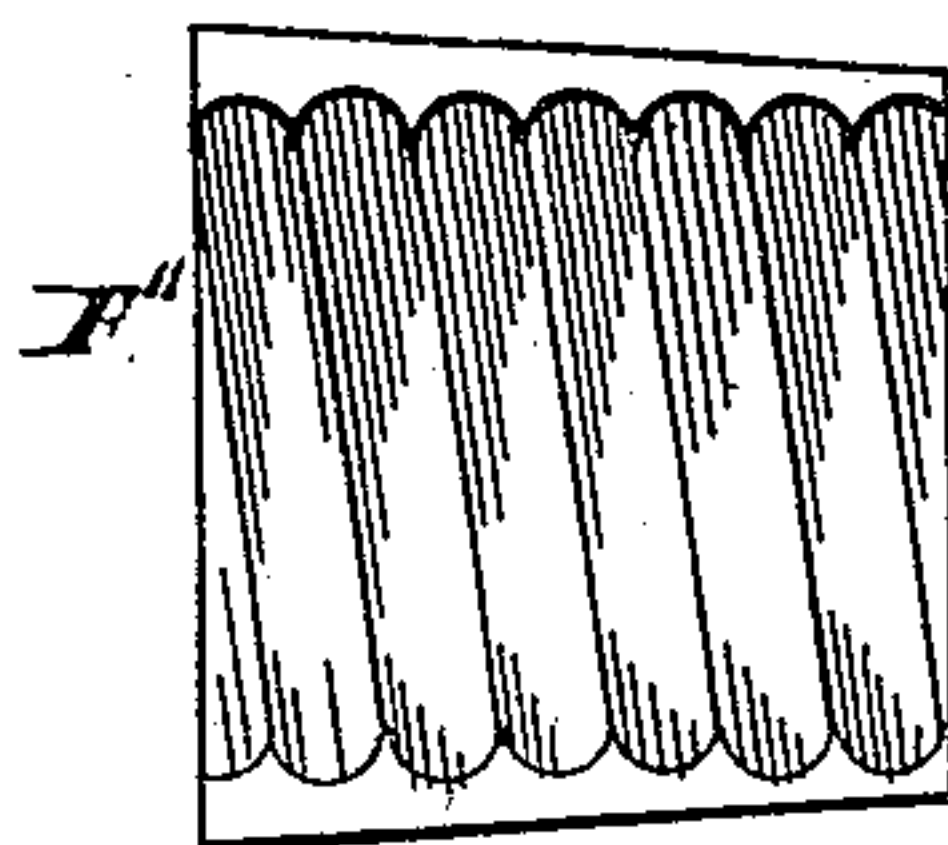


Fig. 14.



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(No Model.)

4 Sheets—Sheet 4.

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Fig. 15.

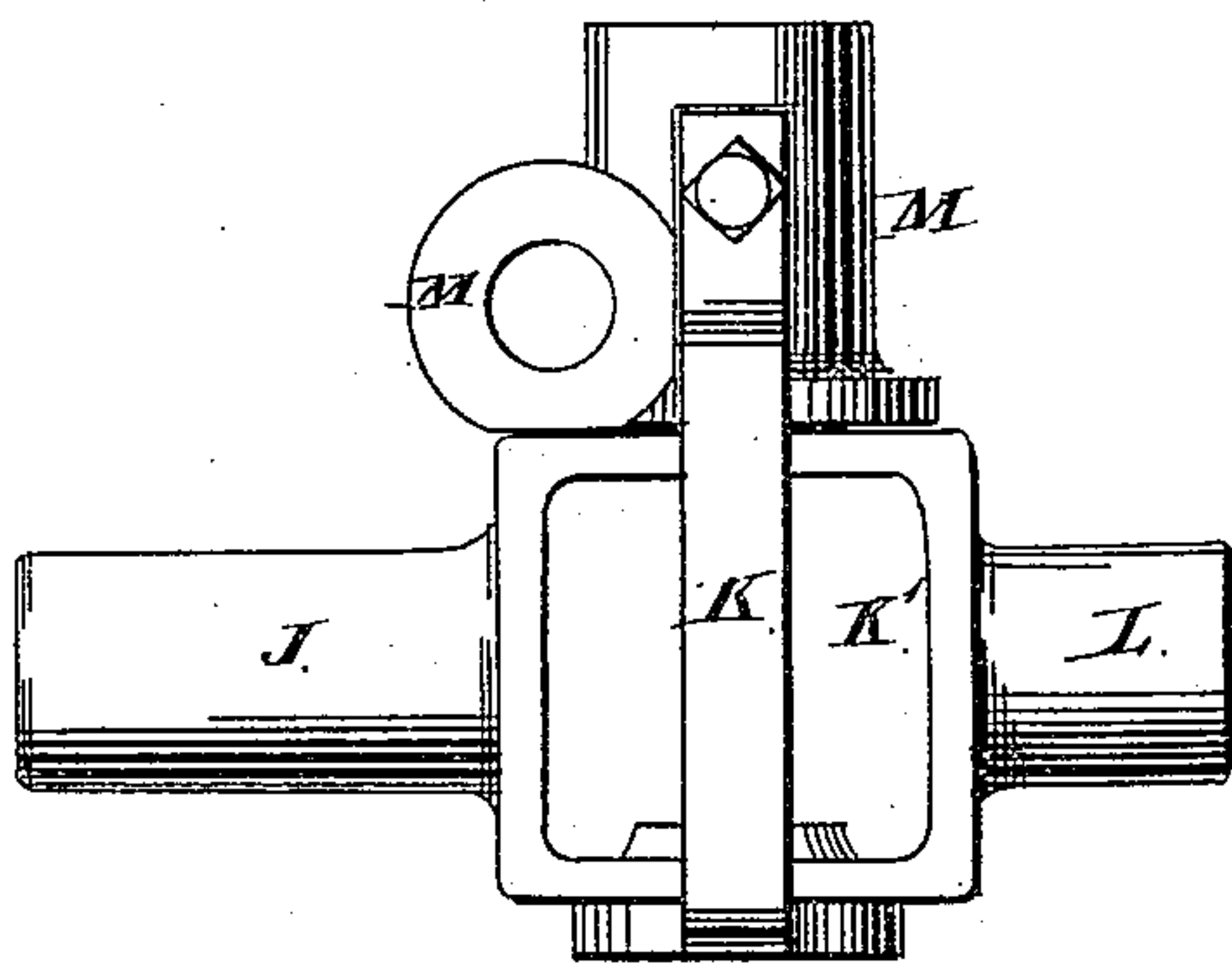


Fig. 16.

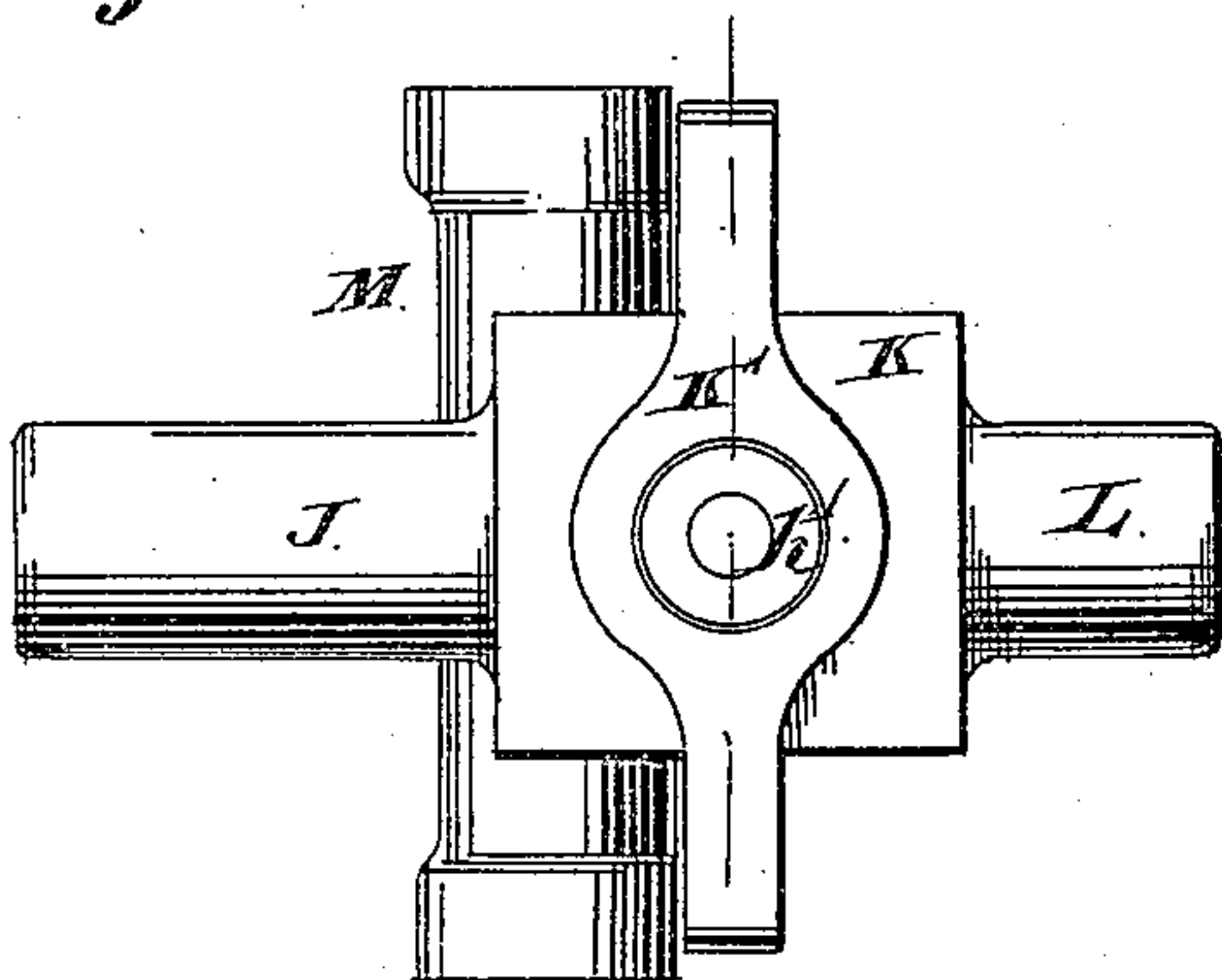
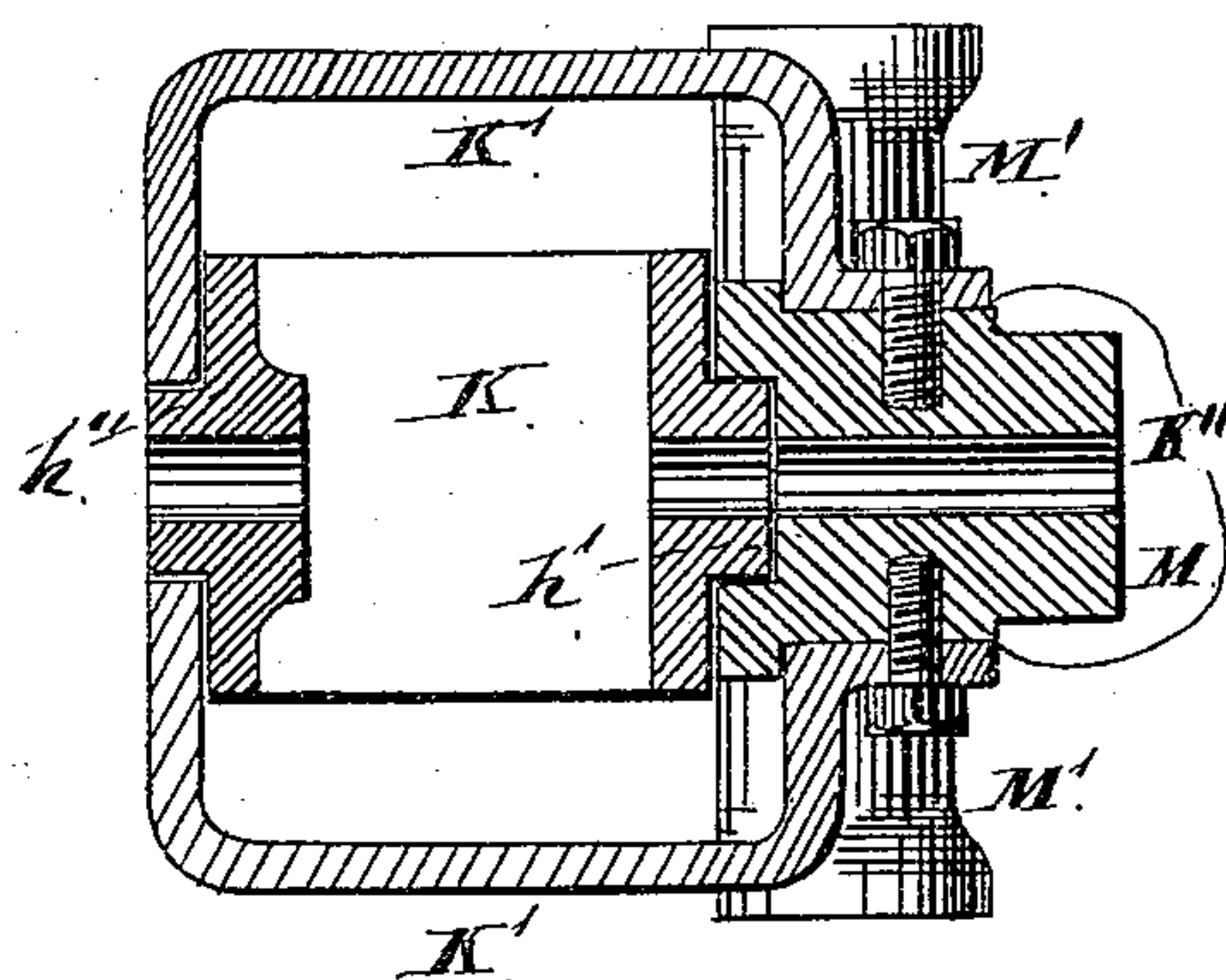


Fig. 17.



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UNITED STATES PATENT OFFICE.

WILLIAM H. CLARK, OF CHICAGO, ILLINOIS.

GROOMING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 270,389, dated January 9, 1883.

Application filed July 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. CLARK, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Grooming-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation with the suspending-rod and driving-belt broken; Fig. 2, a front elevation with the suspending-rod and driving-belt broken and the brush and its flexible shaft removed; Fig. 3, a detail, being a horizontal section on line *x x* of Fig. 2; Fig. 4, a detail, being a vertical section of the upper pivotal support on line *y* of Fig. 1; Fig. 5, a detail, being a top or plan view of the rigid section of the brush-driving shaft and its support and driving devices; Fig. 6, a detail of the flexible section of the brush-driving shaft; Fig. 7, a vertical longitudinal section through the rigid section of the brush-driving shaft and its support; Fig. 8, a detail showing the handle and its shaft, to which the brush is affixed; Fig. 9, a detail, being a longitudinal section of the coupling-nut connecting the brush with the flexible section of its shaft; Fig. 10, an enlarged detail in side elevation of the coupling for connecting the rigid and flexible sections of the brush-driving shaft; Fig. 11, a vertical longitudinal section of the parts shown in Fig. 10; Fig. 12, an end view of Fig. 10; Figs. 13 and 14, details, being an end view and an elevation of the clamping half-boxes for securing the end of the flexible shaft-section of the brush-driving shaft in the coupling; Figs. 15, 16, and 17, enlarged details, being respectively a top or plan view, a side elevation, and a section of the swinging head, stirrup, and support for the brush-shaft.

This invention relates to grooming-machines, and has for its objects to construct a machine by means of which the grooming operation can be effectually and efficiently performed over the entire surface of the animal without any inconvenience or difficulty to the operator, and at the same time have the apparatus light, so as to be easily handled, and flexible, so that the operator can readily handle the grooming device to bring it in contact with the entire surface of the animal; and its nature consists

in providing a revolving brush and non-rotating handle, and a brush-driving shaft, composed of a rigid and a flexible section, arranged and operating as hereinafter described; in providing a coupling consisting of a head having a screw-threaded end, half-boxes, also screw-threaded on their interior, and binding nuts or collars for connecting the rigid and flexible sections of the brush-driving shaft; in providing a shaft passing through the handle and rigidly attached at one end to the flexible section of the brush-driving shaft, and having the brush attached to its other end to allow the brush to be driven without rotating the handle, and at the same time leave the handle free to turn, as required, in use; in providing a rigid brush-driving shaft-section, consisting of an outer stationary tube or casing, and an inner rod or shaft for facilitating the handling of the brush and maintaining a proper relation with the driving devices; in providing a boxing or frame within which is located the shaft-driving pinion or devices, and to which is attached one end of the rigid section of brush-driving shaft, which frame or support is pivotally attached, so as to permit free vertical movement of the brush-driving shaft, and is supported on a head by means of a stirrup, which head also carries a driving-pulley, and is suspended by a rod or other rigid connection from a suitable support; in providing a connection for the upper end of the suspending-rod, which permits its lower end to swing to the right and left and forward and back, which connection also carries driving-pulleys for communicating motion through a belt to the pulley which drives the brush-shaft; in the peculiar construction and arrangement of the upper connection for the suspending-rod, as hereinafter more specifically described; in the peculiar construction and arrangement of the support or connection carrying the brush-driving shaft and its driving devices, as hereinafter more specifically described; and in the several parts and combination of parts hereinafter described and claimed as new.

In the drawings, A represents the brush, of a circular form and made of bristles *a*, secured in a head or center, *a'*, in any usual and well-known manner. The head or center *a'* has a central longitudinal opening, and its ends, as

shown, are recessed, but could be otherwise formed.

B is the brush-shaft, one end of which is screw-threaded and enters a screw-threaded coupling, *c*, and the other end is provided with a head or enlargement. This shaft passes longitudinally through the center of the head *a'*, and is maintained in position by plates or caps *b*, one at each end of the head *a'*, so as to unite the brush A to the shaft B and cause the two to revolve together.

C is the handle to be grasped by the operator, and made of wood or other suitable material of a form to fit and be grasped by the hand. This handle is provided with a central opening, and is located, in the form of construction shown, back of the brush.

D is a shaft on which the handle C is mounted. This shaft at one end is provided with a collar or flange, *d*, and the end of the shaft, which projects beyond the collar, is screw-threaded, and enters the coupling *c*, which coupling is of sufficient length for the ends of the shafts B and D to enter without touching, and furnishes the means for connecting the brush, so that it can be readily removed when worn out to be replaced by a new one, or for cleaning or other purposes. The other end of this shaft D projects beyond the end of the handle and enters a socket or plug, *d'*, in which it is firmly secured, and this socket or plug *d'* is in turn firmly secured in the end of the flexible section of the driving-shaft, so that by the revolution of such shaft the brush A will be revolved through the rotation of the shafts D B, while the handle C is stationary with reference to the brush A, but is free to turn with the hand in guiding and directing the brush.

E is the flexible section of a driving-shaft, made of steel wire or other suitable material, that can be coiled, as shown in Fig. 6, the direction of the cord being with the direction that it is desired the brush shall have, so that the revolution will not uncoil it. This shaft has secured in its front end the socket or plug *d'*, and its inner end is connected with the outer end of the rigid section of the driving-shaft.

F is a cylindrical ring or collar, screw-threaded on its interior and having at one end a flange or rim to leave an opening of sufficient diameter for the insertion of the flexible section E; F', a cylindrical ring or collar, screw-threaded on its exterior for a portion of its length to receive the collar F, and having its interior formed tapering.

F'' are half-boxes screw-threaded on their interior to correspond in pitch to the pitch of the coils of the shaft-section E, so as to fit over the end of such section, and having their exterior formed tapering. These half-boxes, when together, have an exterior diameter to allow them to be inserted within the collar F'. These parts F F' F'' may be made of malleable iron or other suitable material that can be cast or otherwise formed into shape, and, as shown, the outer end, F''', of the collar F is

formed to receive a wrench or other means for screwing the collar down to place and clamping the end of the shaft-section E firmly in place.

G is a plug or core made of metal and having on its exterior a screw-thread corresponding in pitch to the pitch of the coils of the section E, so that the plug can be screwed into the end of the shaft-section E, while the half-boxes F'' fit over or around the exterior of the shaft-section. This plug or head G has an end extension, *e*, of less diameter than the body of the plug, which has a central opening to receive the end of the other section of the driving-shaft, which is to be secured therein in any suitable manner that will firmly unite the plug and the shaft-section. Around this end *e*, the exterior of which is cylindrical, is located a ring or collar, G', having at one end an enlarged opening, which is screw-threaded.

H is the rigid section of the driving-shaft, the front end of which is secured in the opening of the plug-extension *e*, so that as the shaft is revolved the plug G will be revolved in the collar or ring G' and communicate motion to the flexible section E.

I is a tube or casing encircling the shaft-section H its entire length. This tube at its forward end is screw-threaded and enters the screw-thread opening of the collar G', and is non-rotating, and may be made of a piece of gas-pipe or other suitable material.

J is a socket having a central opening for the passage of the shaft-section H, and a screw-threaded opening in its end to receive the end of the tube or casing I. This socket furnishes a bearing for the shaft-section H and the means for attaching the tube or casing to the pivoted frame or support.

K is a pivoted frame or support, made of cast-iron or other suitable material that can be formed into shape to have a central opening to receive the shaft-driving devices, and its shape may be square, rectangular, or other form. The socket J is formed with or secured to one side of this frame or support K, and on two of the sides of the frame or support, at right angles to the socket J, are located trunnions *h'*, by means of which the frame or head K is pivotally supported. One of these trunnions enters an opening in the end bar of a stirrup or strap, and the other has its bearing in the end of a support or head, M, to which support or head the open end of the stirrup or strap is secured by screws or otherwise. This strap or stirrup K' may be of the form shown, or other form, to receive and support the frame or head K, in connection with the head or support M. The end of the shaft H projects within the opening in the frame K, and has attached thereto a pinion, *g*, which meshes with a pinion, *g'*, on a cross-shaft, *h*, passing transversely across the frame K through the trunnion *h'*.

L is a socket formed with or secured to the side of the frame K, opposite to the socket J. This socket has secured therein one end of a rod or bar, L', on which is located a ball or

weight, *L''*, which is adjustable, and acts as a counter-balance to the tube *I* and shaft *H*, and other devices connected therewith, to facilitate the handling of the brush by the operator in a vertical direction by removing the weight or counterbalancing it through the weight or ball *L''*.

M is a head or support made of cast-iron or other suitable material and having a vertical sleeve or socket, *M'*, cast or formed therewith. As shown, the upper and lower face is provided with flat spots or surfaces *K''* for the attachment of the stirrup or hanger *K'*; otherwise its exterior is cylindrical; but its exterior might be square or other shape. This head or support *M* has a suitable opening for the passage of the shaft *h*, the end of which projects beyond the end of the support *M*, and has secured thereto a pulley-wheel, *i*, over which a belt, *j*, passes for driving the pulley and rotating the shaft *h*, and driving the pinions *g' g* to rotate the shaft-section *H*.

N is a rod or bar, the lower end of which passes through the socket *M'*, and is secured in place, as shown, by suitable pins or screws, but which might be attached to the socket by a screw-thread or otherwise.

O is a hanger made of malleable iron or other material that can be cast or formed into shape to have a disk or plate portion, with a central circular opening and a socket portion to receive the upper end of the suspending-rod *N*, which may be screwed therein or otherwise inserted and secured in a firm manner.

P is a hub or bearing having vertical opening for the passage of the shaft, and adapted to receive the plate portion of the hanger *O*. This hub or bearing is cast or formed with a hub or bearing, *P'*, the two standing transversely to each other; and the hub *P'* is provided with a central circular opening for the passage of a spindle or pivot-pin, *u*.

Q is a nut or plate having a screw-threaded opening, by means of which it can be applied to the end of the hub or bearing *P*, which is screw-threaded to receive it; *R*, a backing plate or flange, formed on the hub or pivot *P*, and between which and the nut or plate *Q* is located the disk portion of the hanger *O*, as shown in Fig. 3. Through the opening in the hub *P* is passed a shaft, *l*, the ends of which project beyond the ends of the hub, and to one end is attached a pulley, *k*, over which the belt *j* passes, and to the other end of the shaft *l* is attached a pulley, *m*, over which a belt, from any suitable power, passes to drive shaft *l* and communicate motion to the pulley *i* from the belt *j* and pulley *k*.

S is a socket having a projecting pin or spindle, *n*, which passes through the opening in the hub or bearing *P'*.

T is a bar, to the end of which is secured the socket *S*, which bar is secured in any suitable manner to the frame, post, wall of the building, or other support at the proper height to locate the support or head *M* at a proper height for use. The hubs or bearings *P P'*,

with the hanger *O*, permit the head or support *M* to swing forward and back and to the right and left, and enable the operator to readily and easily bring the brush in contact with the surface of the animal without changing the position of the animal, and by these swinging movements, in connection with the pivoted frame *K*, the brush is under the control of the operator, so that it can be moved forward and back and up and down over the surface of the animal, while the flexible section of the driving-shaft permits the brush to be turned in all directions, as required, for use.

In putting the parts together the brush is slipped onto the shaft *B*, and the end of the shaft screwed into the coupling *c*. The end of the shaft *D* is screwed into the coupling *c*. The handle *C* is slipped onto the shaft *D*, and the end of the shaft secured in the plug or socket *d'* in the end of the flexible shaft *E*. The other end of the flexible shaft is screwed onto the plug *G*. The half-boxes *F''* are placed thereover and forced down to clamp the end of the shaft onto the plug *G* by the collars or thimbles *F' F'*. The collar *G'* is slipped onto the extension *e*, in which the end of the shaft *H* is secured. The tube or casing *I* is screwed into the collar or thimble *G'*. The other end of the shaft *H* is passed through the bearing or socket *J*, and the socket or bearing screwed onto the tube or casing *I*. The wheel *g* is attached to the shaft *H* inside the frame *K*, and the wheel *g'* is attached to its shaft *h* by inserting the shaft through the frame *K*. The frame is attached to the head or support *M* by passing the shaft *h* through the head and inserting the trunnion *h'* in the opening therefor in the head, and inserting the opposite trunnion, *h''*, in the opening therefor in the end bar of the stirrup *K'*, and attaching such stirrup to the head *M*. The pulley *i* is placed on the end of the shaft *h*. The head *M* is attached to the rod *N* by the socket *M'*, and the other end of the rod *N* is attached to the hanger *O*, which is slipped over the hub or bearing *P* and secured in place by the nut or plate *Q*. The hub or bearing *P'* is slipped onto the spindle or pin *u* and held in place by a nut or pin. The shaft *l* is passed through the hub *P*, and the pulleys *k m* attached to its ends. The belt *j* is passed over the pulleys *i k*, and the belt from the motive power is passed over the pulley *m*, when the apparatus is ready for use.

In use, the operator takes hold of the handle *C* and passes the brush over the surface of the animal, and this brush, being revolved through the shaft *B*, coupling *c*, shaft *D*, flexible shaft *E*, the rigid shaft *H*, from the gear *g g'*, shaft *h*, pulley *i*, belt *j*, and pulley *k*, will act to thoroughly groom the animal. The coupling *F F' F''* enables the flexible shaft to be readily removed and replaced in case it becomes broken or disabled in use.

When it is desired to groom both sides of the animal two of the machines can be used, one on each side; but by turning the horse, a single machine only is required.

The acting portion of the brush A may be made of wire, bristles, or other material which will not be too harsh on the animal, and at the same time act properly in performing the grooming operation.

Heretofore a grooming-machine has comprised in its structure a rigid shaft-section coupled to and revolved by a flexible shaft-section and extending through a hollow handle, the outer end of the rigid shaft-section carrying a cylindrical brush-head. In another instance a grooming-machine has comprised in its structure a bed-plate carrying driving mechanism which revolves a rigid shaft-section, having a universal-jointed connection at one end with the driving mechanism, the other end of said shaft being coupled to and revolving a flexible shaft-section, which is connected with a brush-head, so as to rotate the same, the brush-head being journaled in a bracket having a handle, whereby the revolving brush can be manipulated in the required directions. Such devices are therefore not broadly claimed by me.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a grooming-machine, the combination of the brush A, having the brush-head *a*, provided with a longitudinal opening, at each end of which is a fixed cap, *b*, with the brush-shaft B, the coupling *c*, the shaft D, having flange *d*, and a projection beyond the same which fits the coupling, the plug *d'*, attached within the flexible shaft-section E, and the handle C, loosely mounted on the shaft D, between its flange and the plug in the flexible section, substantially as described.

2. In a grooming-machine, the combination of the brush A, having the brush-head *a*, provided with a longitudinal opening and a cap, *b*, at each end thereof, the shaft B, extending through the brush-head and having its end portions supported by the caps, the interiorly-threaded coupling *c*, into one end of which the brush-shaft screws, the shaft D, having a flange, *d*, and a threaded projection beyond the flange which screws into the coupling, the plug *d'*, fitted at one end within the flexible shaft-section E, and having the end of the shaft D secured in its other end, the handle C, loosely mounted on the latter between its flange and the said plug, and a rigid shaft, H, arranged to oscillate in its bearings, substantially as described.

3. In a grooming-machine, the combination of the brush A, the brush-shaft B, extending through the same and supported at its ends, the shaft D, the coupling *c*, connecting the two shafts, the handle C, loosely mounted on the shaft D, the plug *d'*, the flexible shaft-section E, the plug G, and the coupling, composed of the interiorly-threaded ring F, the exteriorly-

threaded ring F', and the interiorly-threaded half-boxes F'', fitted on the flexible shaft-section, substantially as described.

4. The brush A, shaft B, coupling *c*, handle C, shaft D, plug *d'*, and flexible shaft-section E, in combination with the coupling F F' F'' G, collar G', rigid shaft-section H, and a driving mechanism, substantially as and for the purposes specified.

5. The collars or thimbles F F', half-boxes F'', and plug G, in combination with the flexible shaft-section E, the tube I, and rigid shaft-section H, extending through said tube for connecting the two sections and the tube together and enabling a disconnection to be had when desired, substantially as specified.

6. The brush A, shaft B, coupling *c*, handle C, shaft D, plug *d'*, flexible section E, coupling F F' F'' G, collar G', rigid shaft H, and tube or casing I, in combination with a socket or bearing, J, pivoted frame or head K, stirrup K', head or support M, and driving-pinions *g g'*, shaft *h*, and pulley *i*, substantially as and for the purposes specified.

7. The brush A, shaft B, coupling *c*, handle C, shaft D, plug *d'*, flexible section E, coupling F F' F'' G, collar G', rigid section H, tube or casing I, socket or bearing J, frame or head K, stirrup K', head M, driving-pinions *g g'*, shaft *h*, and pulley *i*, in combination with the socket L, rod or bar L', and ball or weight L'' for maintaining the equilibrium in handling the brush, substantially as and for the purposes specified.

8. The brush A, shaft B, coupling *c*, handle C, shaft D, plug *d'*, flexible shaft-section E, coupling F F' F'' G, collar G', rigid shaft-section H, tube or casing I, socket or bearing J, frame or support K, stirrup K', head or support M M', pinions *g g'*, shaft *h*, pulley *i*, socket L, rod or bar L', and ball or weight L'', in combination with the suspending-rod N, hanger O, and hub or bearing P P' for suspending the actuating devices to give them perfect freedom of movement in handling the brush, substantially as and for the purpose specified.

9. The brush A, shaft B, coupling *c*, handle C, shaft D, plug *d'*, flexible shaft-section E, coupling F F' F'' G, collar G', rigid shaft-section H, tube or casing I, socket or bearing J, frame or support K, stirrup K', head or support M M', pinions *g g'*, shaft *h*, pulley *i*, socket L, rod or bar L', and ball or weight L'', in combination with rod N, hanger O, bearings or hubs P P', spindle or pin *n*, shaft *l*, pulley *k*, and driving-belt *j*, substantially as and for the purposes specified.

WILLIAM H. CLARK.

Witnesses:

O. W. BOND,
B. A. PRICE.