

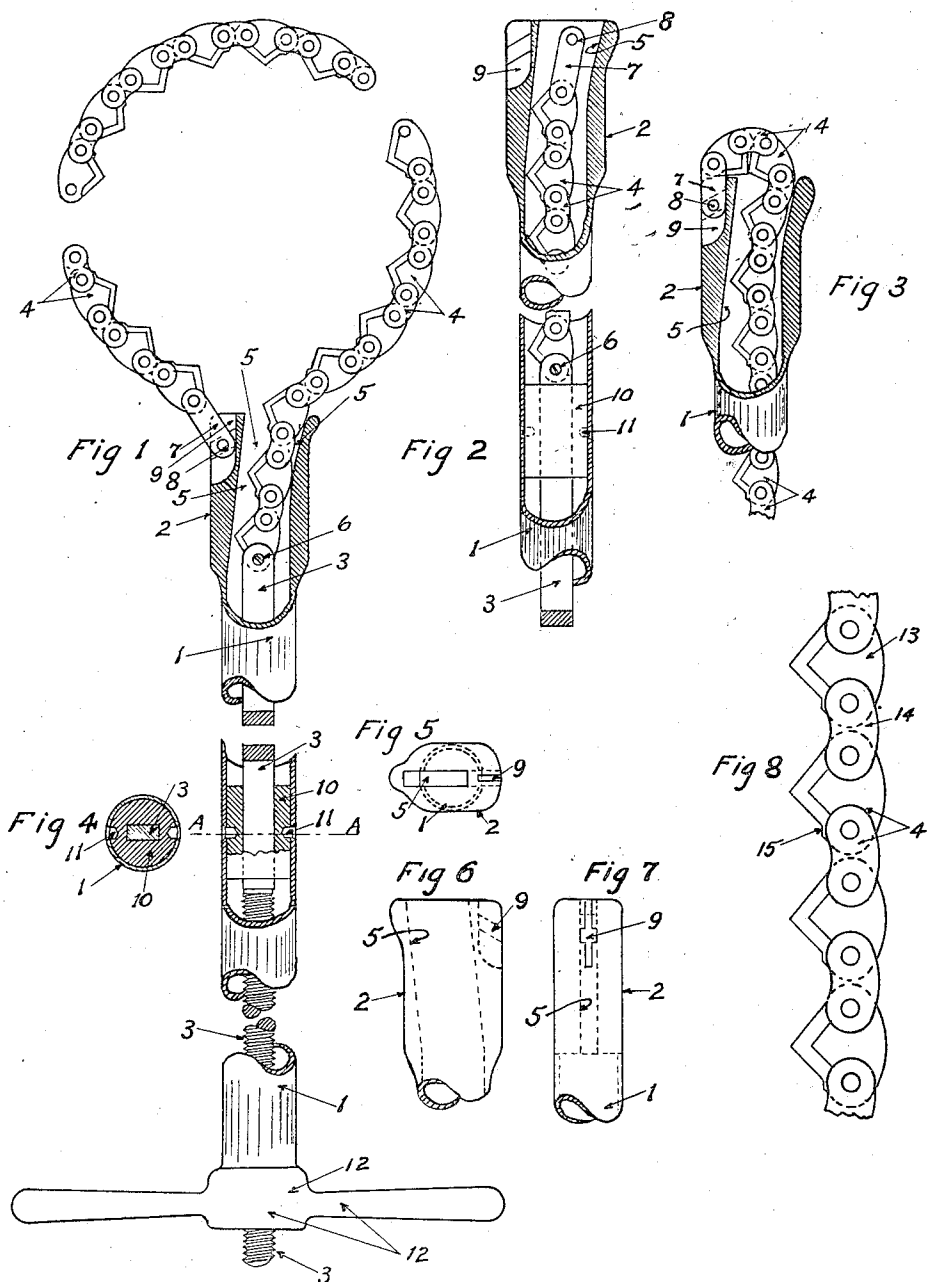
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H. E. KINGMAN ET AL

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EMBRYOTOME

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WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY E. KINGMAN AND JAMES FARQUHARSON, OF FORT COLLINS, COLORADO.

EMBRYOTOME.

Application filed November 10, 1922. Serial No. 600,146.

To all whom it may concern:

Be it known that we, HARRY E. KINGMAN, a citizen of the United States, and JAMES FARQUHARSON, a subject of Great Britain, both residing at Fort Collins, in the county of Larimer and State of Colorado, have invented a new and useful Embryotome, of which the following is a specification.

Our invention relates to embryotomes or surgical instruments for use especially in veterinary surgery for dismembering or mutilating a fetus, which, by reason of misplacement or other abnormal condition, cannot be extracted by natural means.

The invention has for its objects to provide a relatively light, compact, substantial and efficient instrument for the purpose for which it is intended, and by means of which a fetus may be reached and dismembered without unnecessary injury to the mother. We attain these objects by the construction illustrated in the accompanying drawings.

In the drawings, Figure 1 is a side view and part section of an embryotome according to our invention, with parts cut away to better indicate relative dimensions.

Figure 2 is a section of the head and side view of the stem or sleeve of the instrument with parts cut away, showing the retracted position of the cutting chain.

Figure 3 is a similar view of the head of the instrument showing the position of the cutting chain after it has been drawn in to completely sever a limb or other portion of the fetus.

Figure 4 is a cross section on the line A—A of Figure 1.

Figures 5 and 6 are, respectively, top and side views of the head of the instrument. And Figure 7 is an edge view of the same.

Figure 8 is an enlarged detailed side view of the cutting chain or flexible sickle.

In the drawing, like numerals indicate the same or like parts throughout the several figures. All parts are preferably constructed of suitable metal.

Numeral 1 indicates the stem of the instrument consisting of a pipe or hollow protecting sleeve for the parts operating therein.

2 is an enlarged head which may be integral with or welded to the sleeve or stem 1.

3 is an operating rod adapted to extend longitudinally through the sleeve 1, and of slightly greater length than the sleeve and head. Rod 3 is of a rectangular cross-section

toward its forward or inner end and is threaded at the opposite or outer end.

4 is a flexible sickle or cutting chain adapted to slide in and out of the sleeve 1 through a rectangular passage way 5 through the head 2. The one end of the cutting chain 4 is adapted to be removably attached to the inner end of rod 3, as by means of a set screw 6. The opposite or forward end of the cutting chain 4 is provided with an end link 7 having a protruding pin 8 to hook into a retaining slot 9 in the outer edge of head 2.

10 is a suitable guide anchored within the sleeve 1, as by means of set screws 11, and through which the rectangular portion of rod 3 slides to prevent the turning of the rod within the sleeve.

12 is a suitable wing-nut or threaded handle to receive the threaded portion of rod 3, and is removably mounted with suitable thrust bearing at the outer end of the sleeve 1. Handle 12 is adapted, through its threaded engagement, to operate the rod 3 longitudinally within the sleeve.

The head 2 is of sufficiently heavy construction to bear the burden of holding and guiding the cutting chain 4. The passage way 5 through the head 2 is preferably somewhat diagonal to the length of the instrument and is rounded and widened at its outer end to better accommodate the inward drawing of the chain as indicated in Figures 1 and 3. This also permits sufficient strength in the part of the head about the slot 9 without unnecessarily enlarging that portion.

The cutting chain 4 is constructed of a series of cutting teeth or sickle sections 13 flexibly linked together by means of links 14. One of the cutting edges of a tooth or section 13 is cut away leaving a shoulder 15 to prevent over-lapping of the cutting edges of adjoining teeth or sections when the chain is drawn at a sharp angle, such as is shown in Figure 3.

The method of operation of this embryotome in veterinary surgery is as follows: The outer end link 7 of the cutting chain is detached from the retaining slot 9 in the head of the instrument and, by turning of the wing-nut or handle 12 or carrying the handle bodily backward away from the sleeve, the rod 3 is drawn outward and the attached cutting chain thereby drawn en-

tirely within the head 2 and stem or protecting sleeve 1, as shown in Figure 2. In this position the instrument is ready for the operation.

5 The head of the instrument is inserted and carried in and through the genital tract of the mother by the operator's hand; the head 2 being carried through the vulva, along the vagina and through the cervix into
10 the uterus, and placed in contact with the portion of the fetus to be dismembered. After insertion in this manner, the cutting chain 4 is expelled or thrust forward through the instrument head until the end
15 link 7 protrudes. Then the operator draws the chain around the limb or portion of the fetus to be cut, and hooks the pin 8 of the end link 7 into the retaining slot 9 in the instrument head, in the position shown in
20 Figure 1. From this position the cutting or mutilation is accomplished by a contraction of the loop of the cutting chain by drawing the chain back through the head into the sleeve by means of the handle 12 working
25 upon the threaded end of the rod 3. When the cutting is complete the chain has assumed the position indicated in Figure 3, and the instrument is removed.

Rod 3 is prevented from turning within
30 the sleeve by the anchored guide 10. And the operator may prevent the turning of the instrument during the cutting operation by grasping the sleeve when the handle 12 is being turned.

35 All edges about the head 2 are beveled or rounded. And by having the rod 3 and cutting chain enclosed in the retaining and protecting sleeve 1, injury to the sides of the genital tract is avoided. The cutting or
40 mutilation is accomplished gradually and easily by means of the threaded operating means, and the drawing of the chain to accomplish the cutting may be effected without extreme lateral pressure upon the sides of
45 the genital tract, or longitudinal displacement of the instrument.

The embryotome may be taken apart for cleaning or repair by forcing the inner end of the rod 3 entirely through the head so
50 that the chain 4 may be detached by removal of set screw 6; then the rod 3 can be drawn outward through the guide 10 and entirely

out of the sleeve. The instrument is again assembled by passing the rod 3 into the sleeve and through the guide 10 and on
55 through and protruding from the head 2 so that the cutting chain can again be attached.

We claim:

1. In an embryotome, the combination of a sleeve with a head at one end thereof, a
60 rod arranged longitudinally therein, a flexible cutting chain operatively connected at one end to said rod and adapted to slide in and out of said sleeve through said head, means to removably attach the other end of
65 said cutting chain to the outside of said head, with means arranged at the opposite end of said sleeve to operate said rod longitudinally in said sleeve, substantially as described. 70

2. In an instrument of the class described, a sleeve with a head at one end thereof, a rod arranged longitudinally in said sleeve and threaded at its end opposite said head, a nut to operate said rod arranged at the
75 end of said sleeve opposite said head, a flexible cutting chain operatively connected at one end to said rod and adapted to slide in and out of said sleeve through said head and removably attached at its opposite end
80 to the outside of said head, substantially as described.

3. In an instrument of the class described, a stem consisting of a hollow sleeve with a head at one end thereof, a rod adapted to
85 work longitudinally through said sleeve and head and threaded at its end opposite said head, a nut on the threaded end of said rod arranged to work on the end of said stem opposite said head to operate said rod, a
90 guide in said sleeve to prevent said rod from turning therein, a flexible cutting chain removably attached at one end to the end of said rod opposite said nut and adapted to slide in and out of said sleeve through said
95 head, with means to removably attach the other end of said cutting chain to the outside of said head, substantially as described.

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Witnesses:

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