

(No Model.)

4 Sheets.—Sheet 1.

P. K. DEDERICK.

BALING PRESS.

No. 334,004.

Patented Jan. 12, 1886.

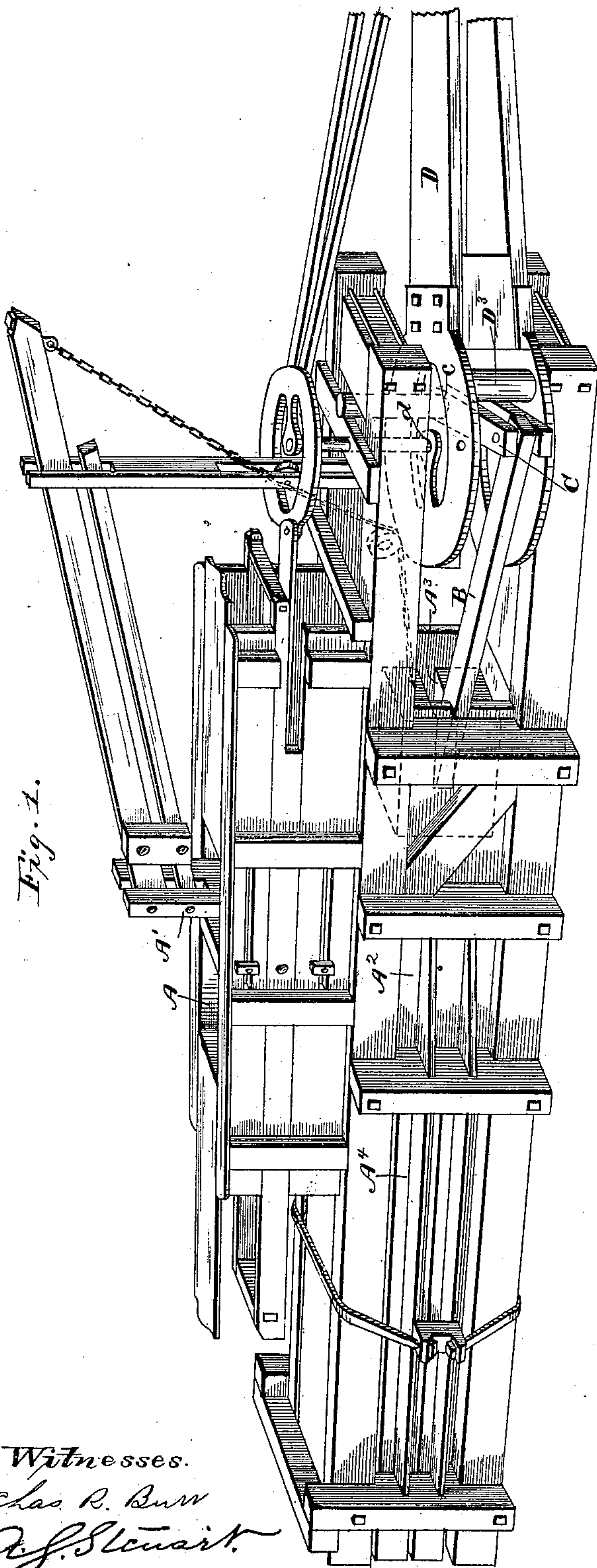


Fig. 1.

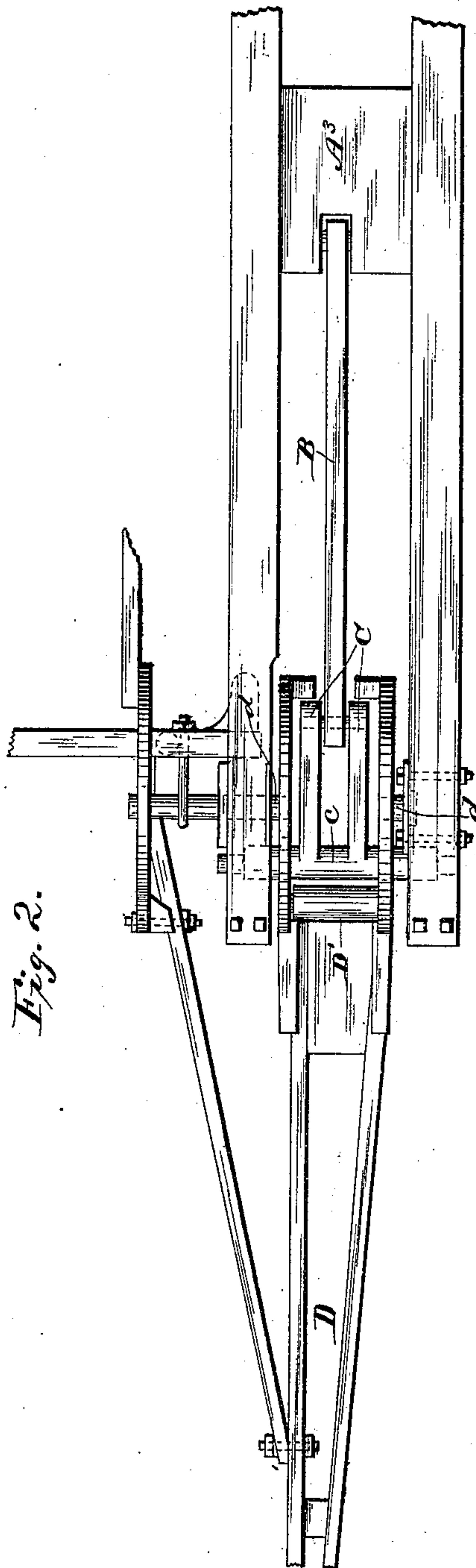


Fig. 2.

Witnesses.  
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(No Model.)

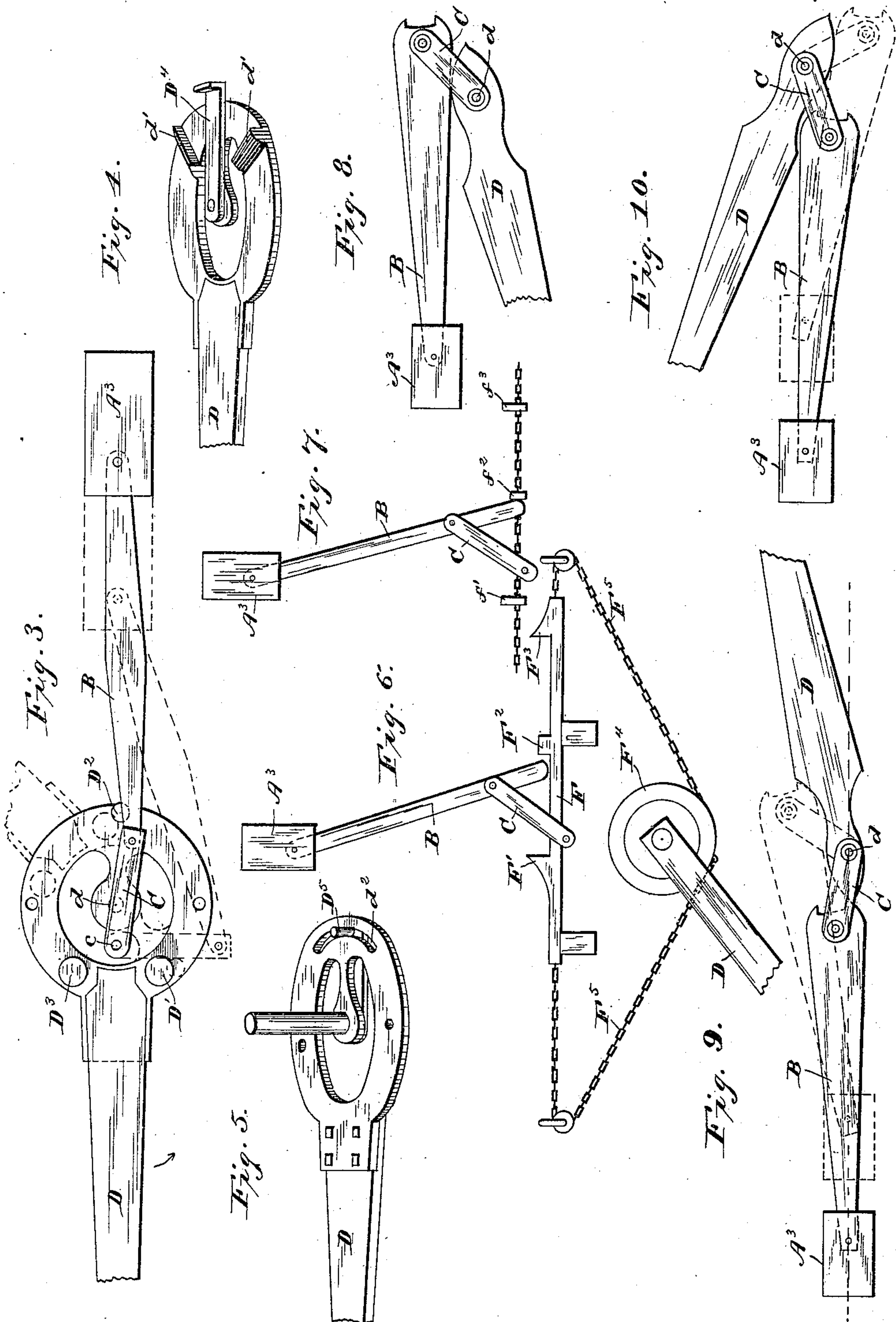
4 Sheets—Sheet 2.

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4 Sheets—Sheet 3.

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Fig. 12.

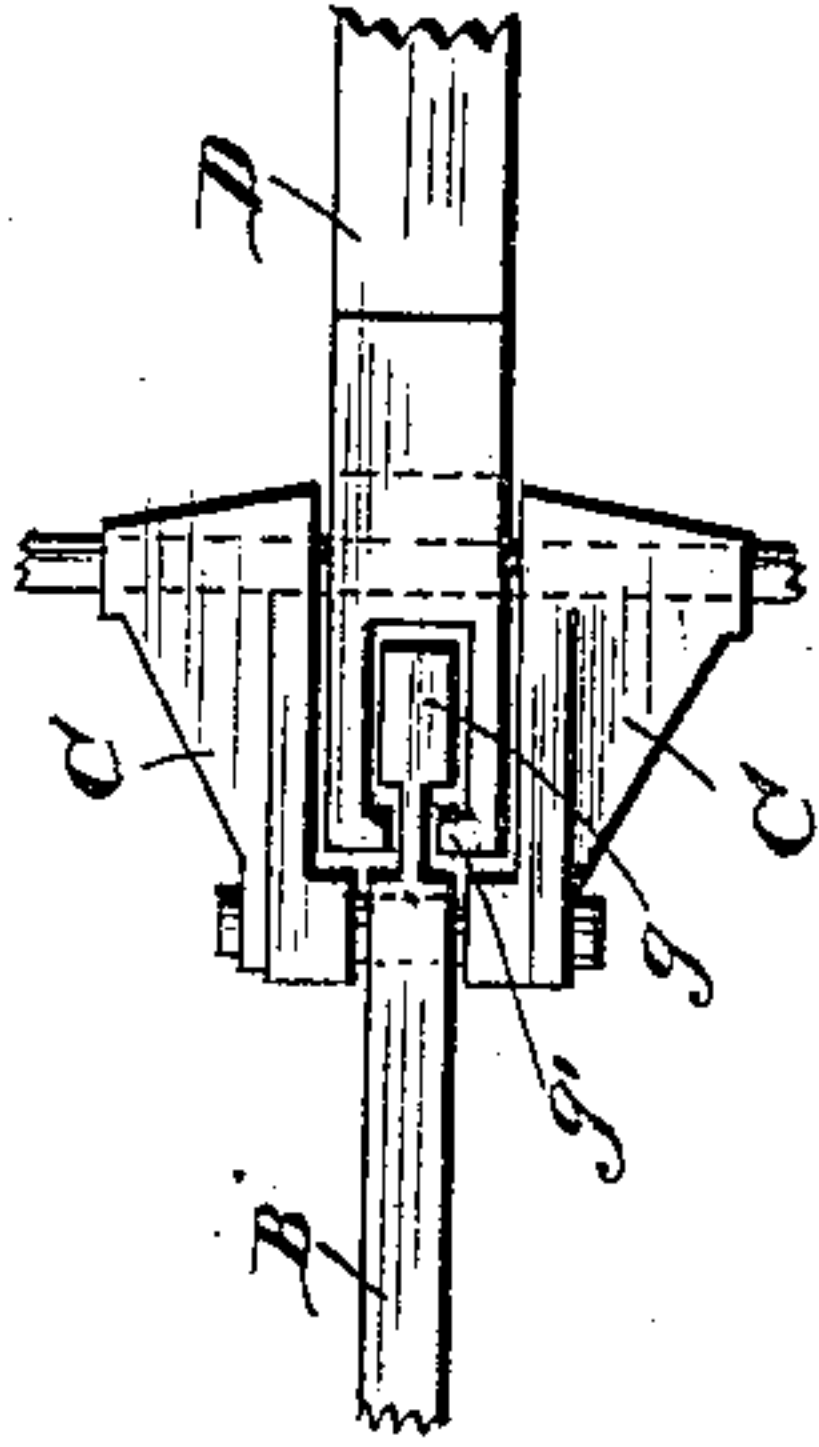


Fig. 11.

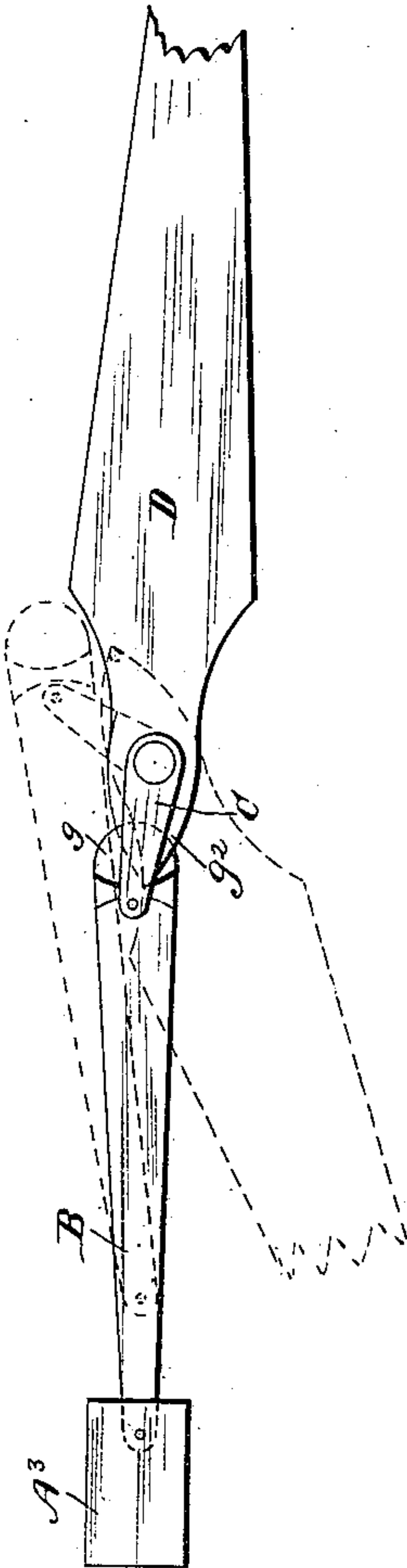


Fig. 14.

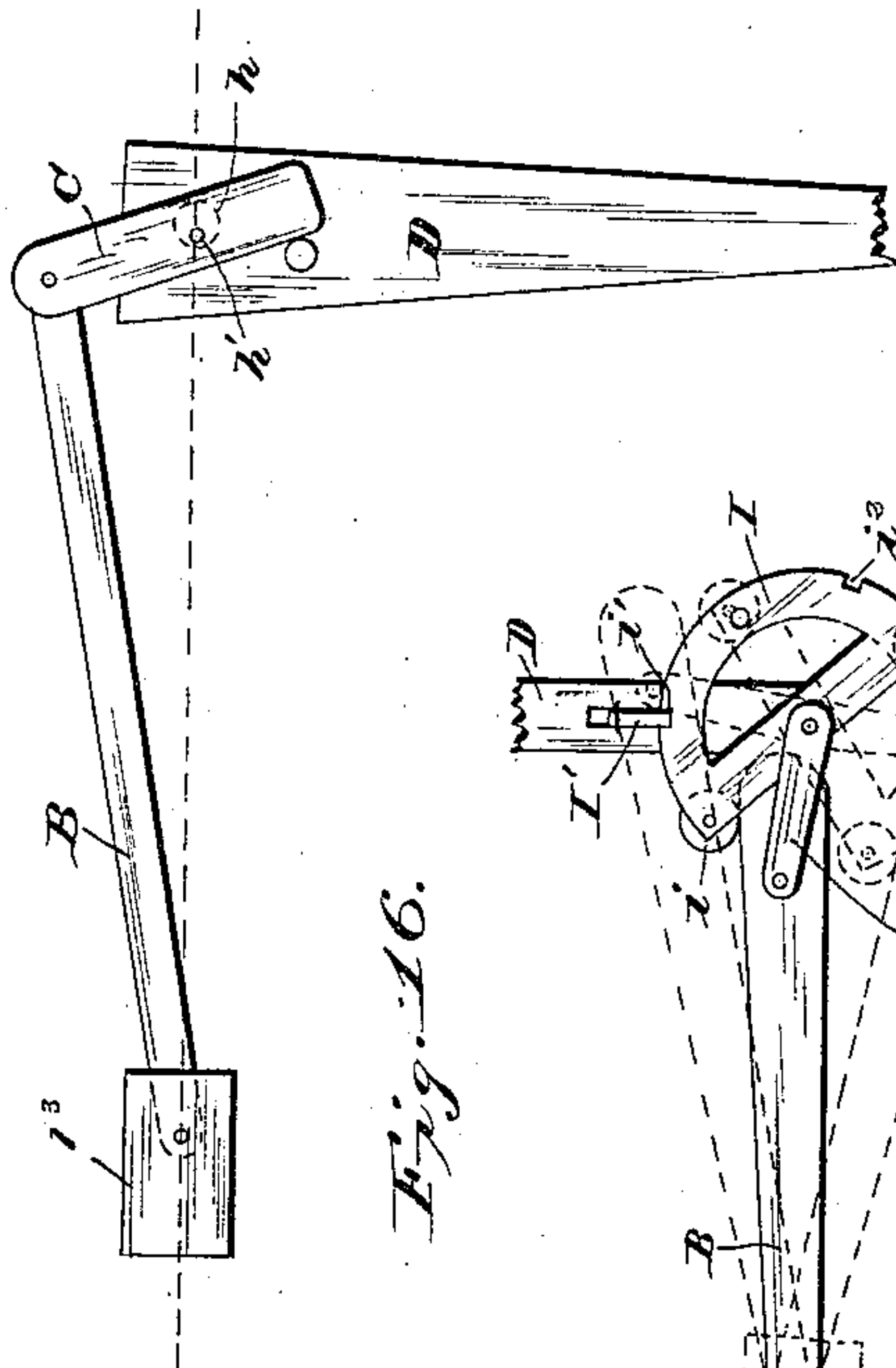


Fig. 16.

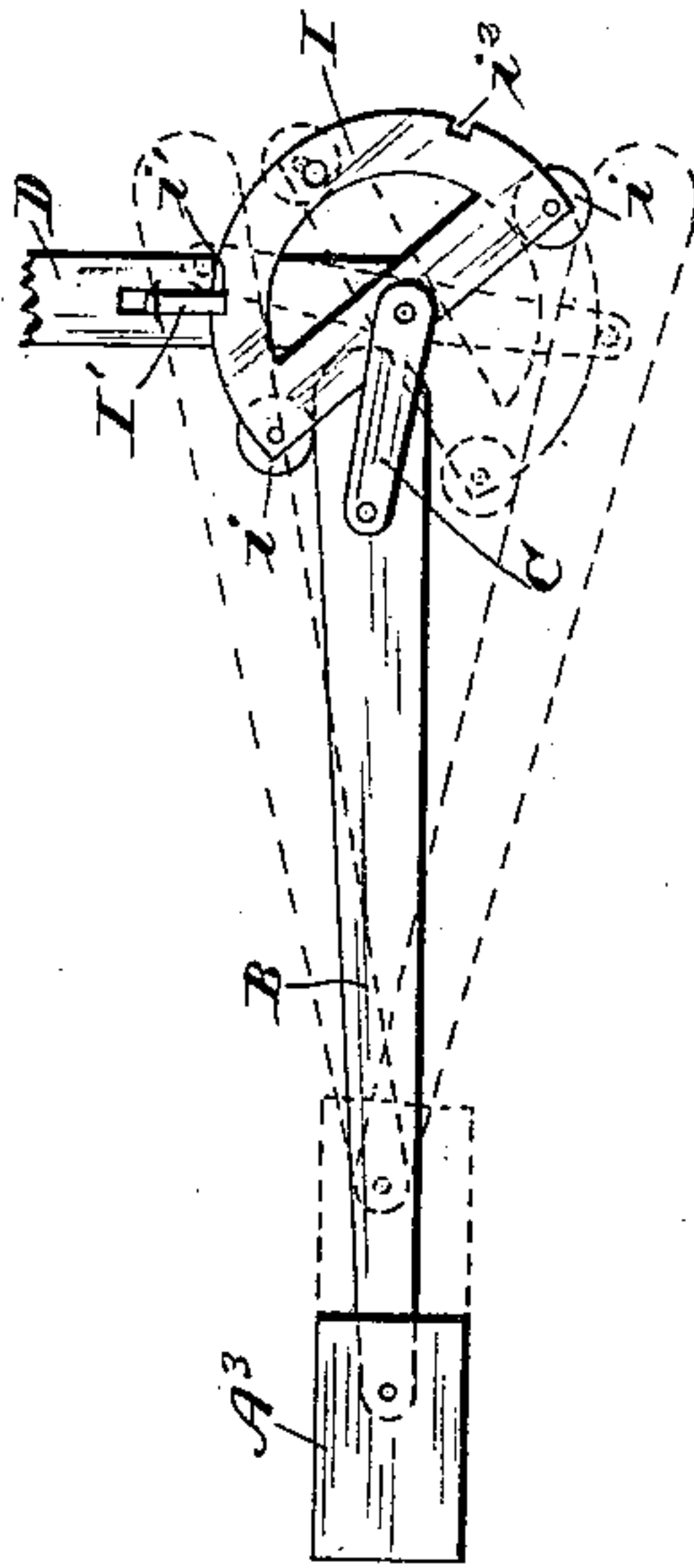


Fig. 13.

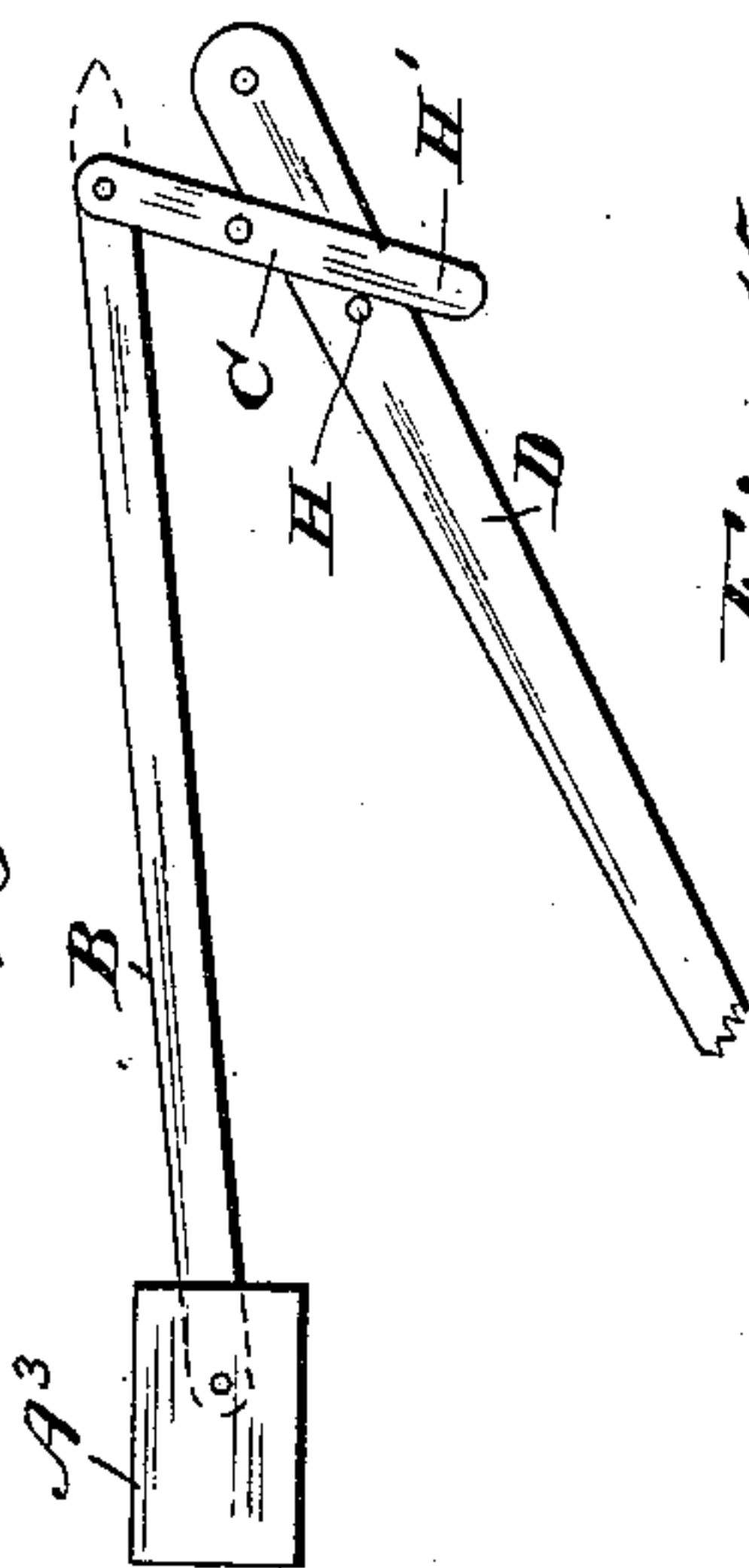
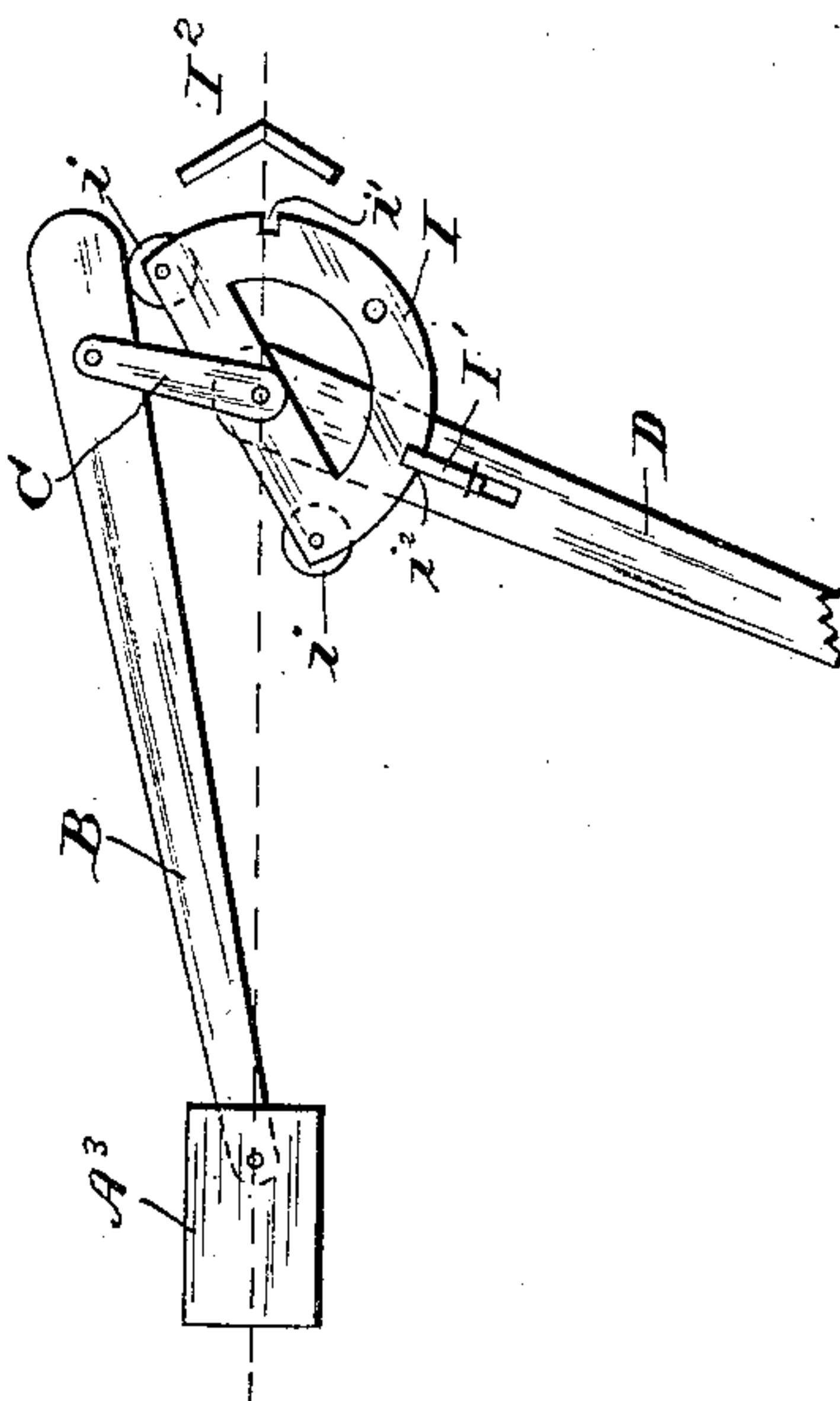


Fig. 15.



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(No Model.)

4 Sheets—Sheet 4.

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Fig. 18.

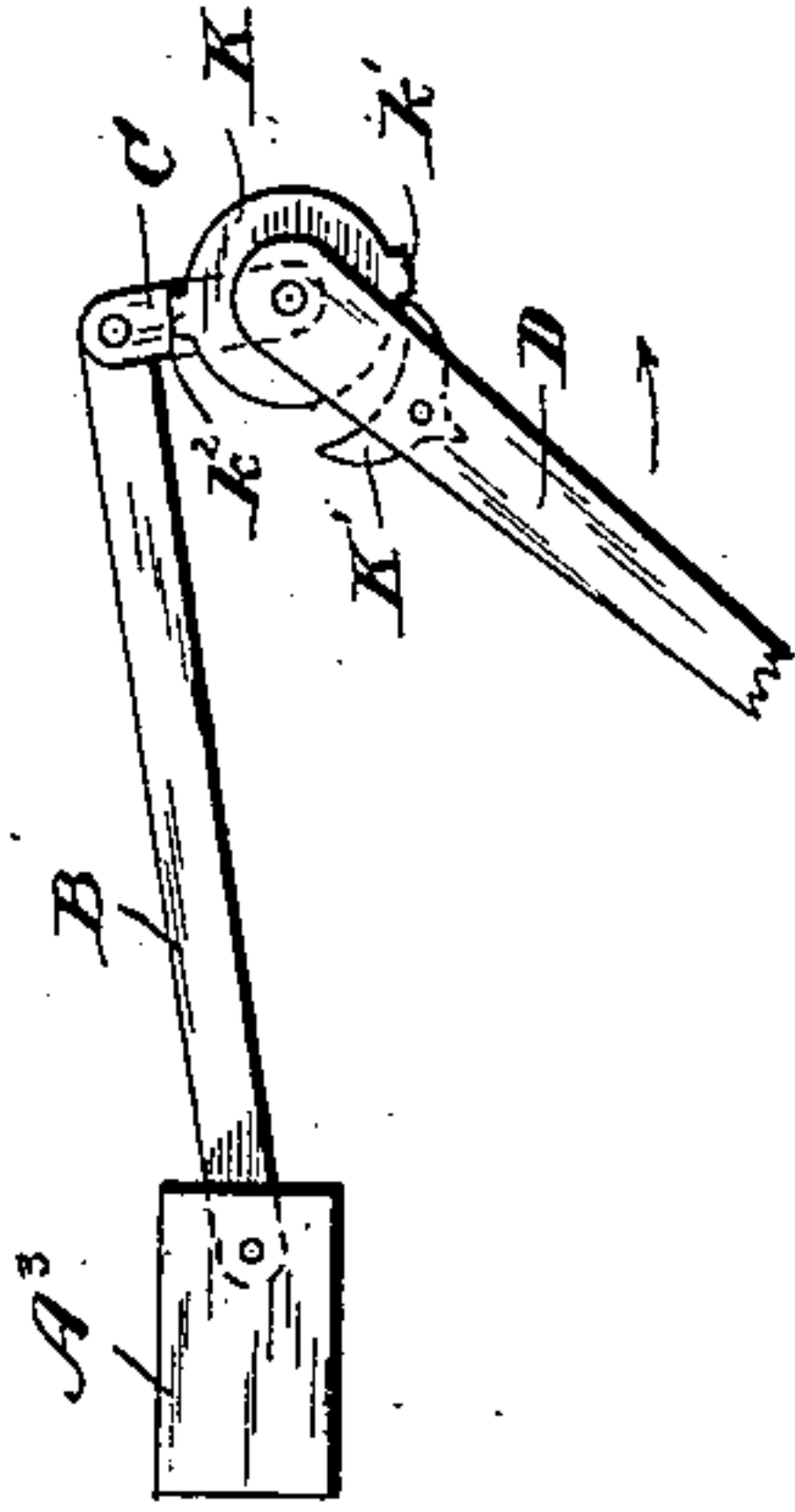


Fig. 21.

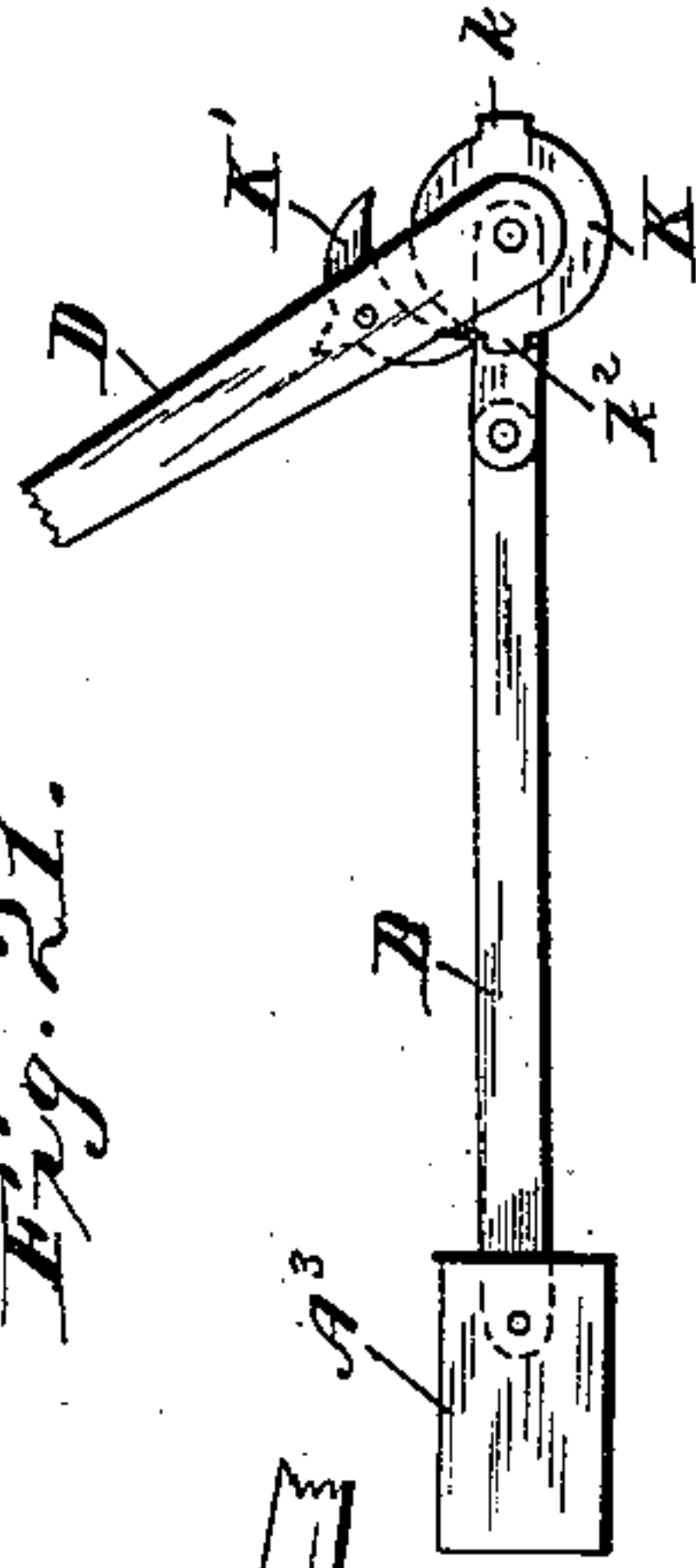


Fig. 25.

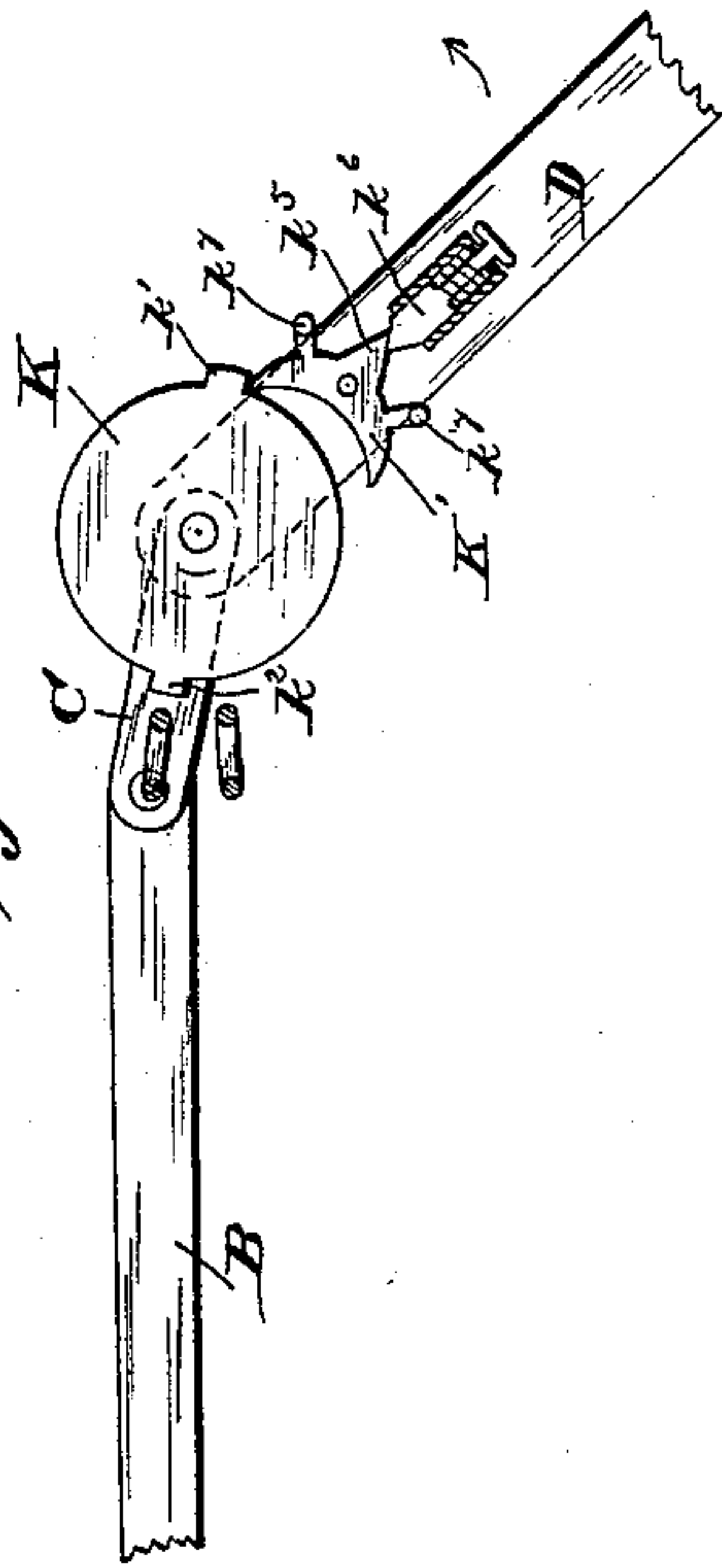


Fig. 20.

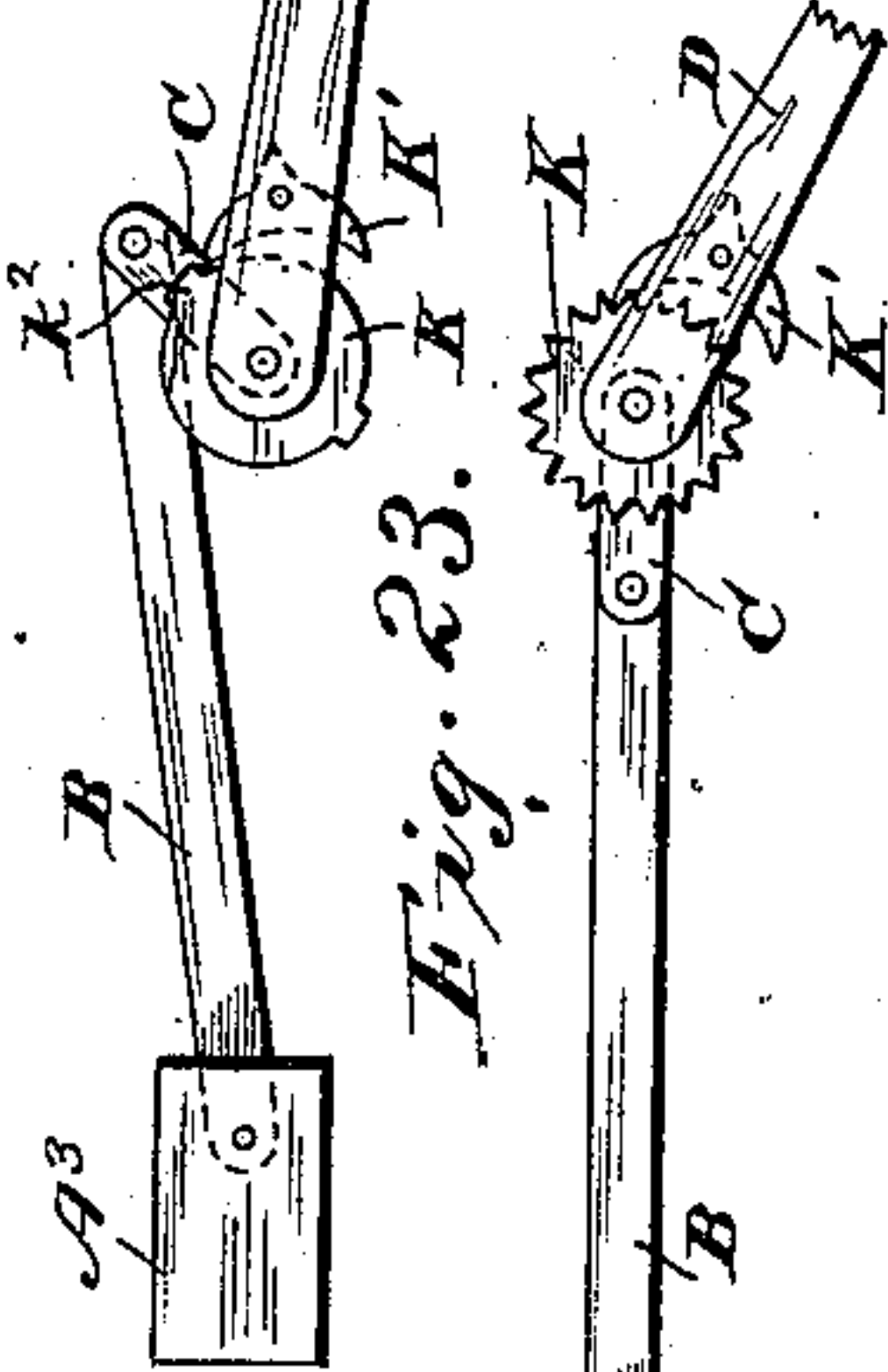


Fig. 23.

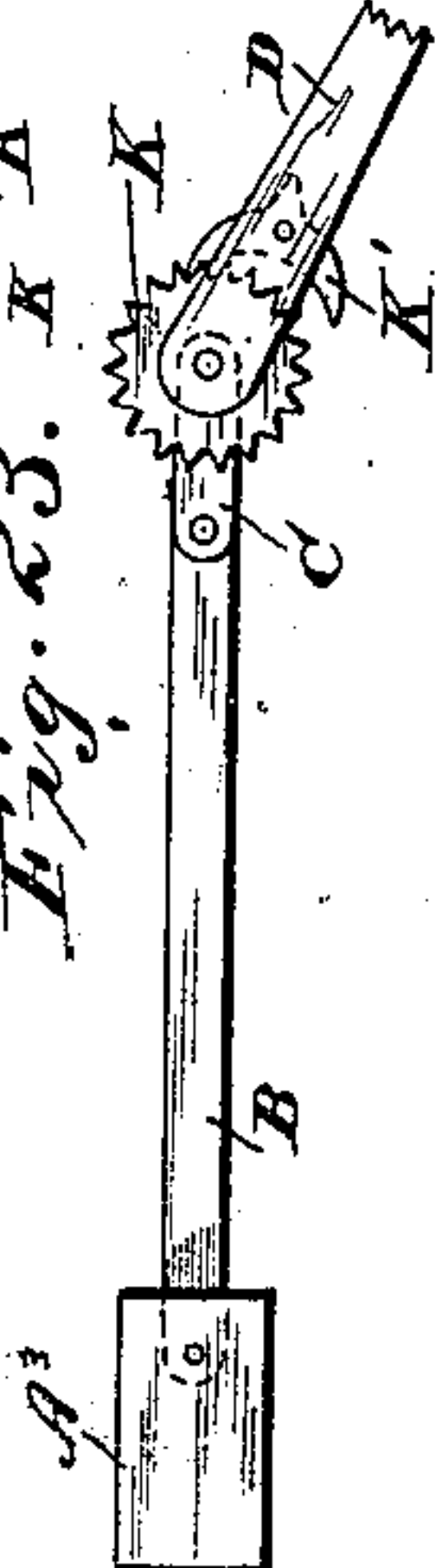


Fig. 22.

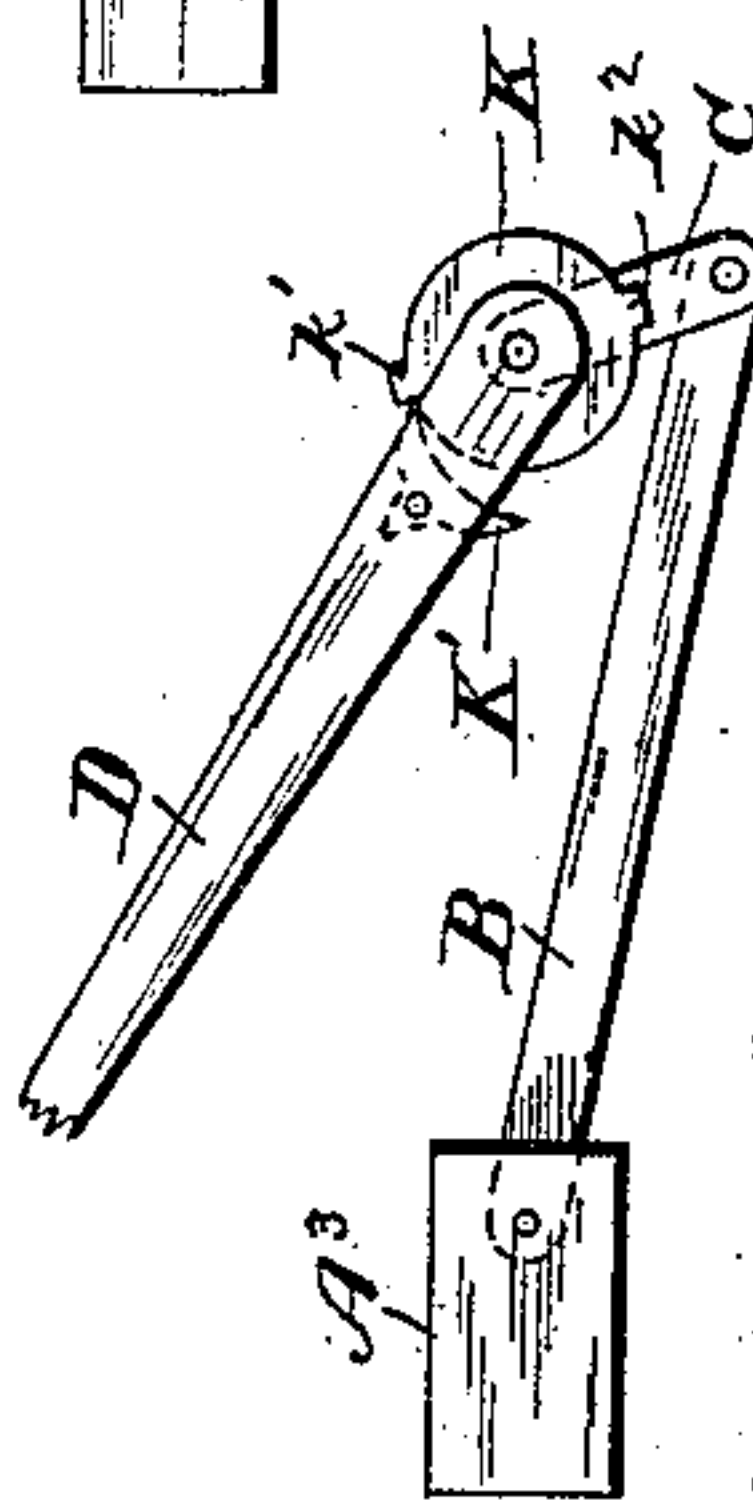


Fig. 24.

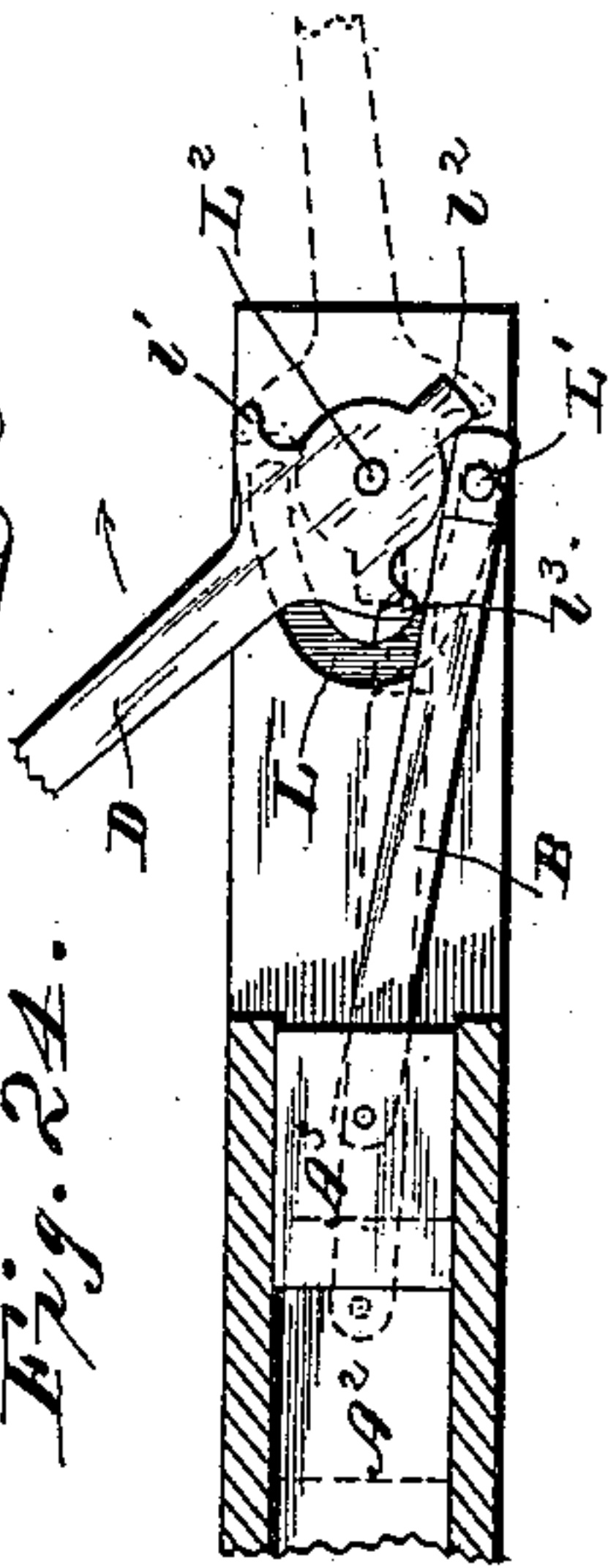


Fig. 17.

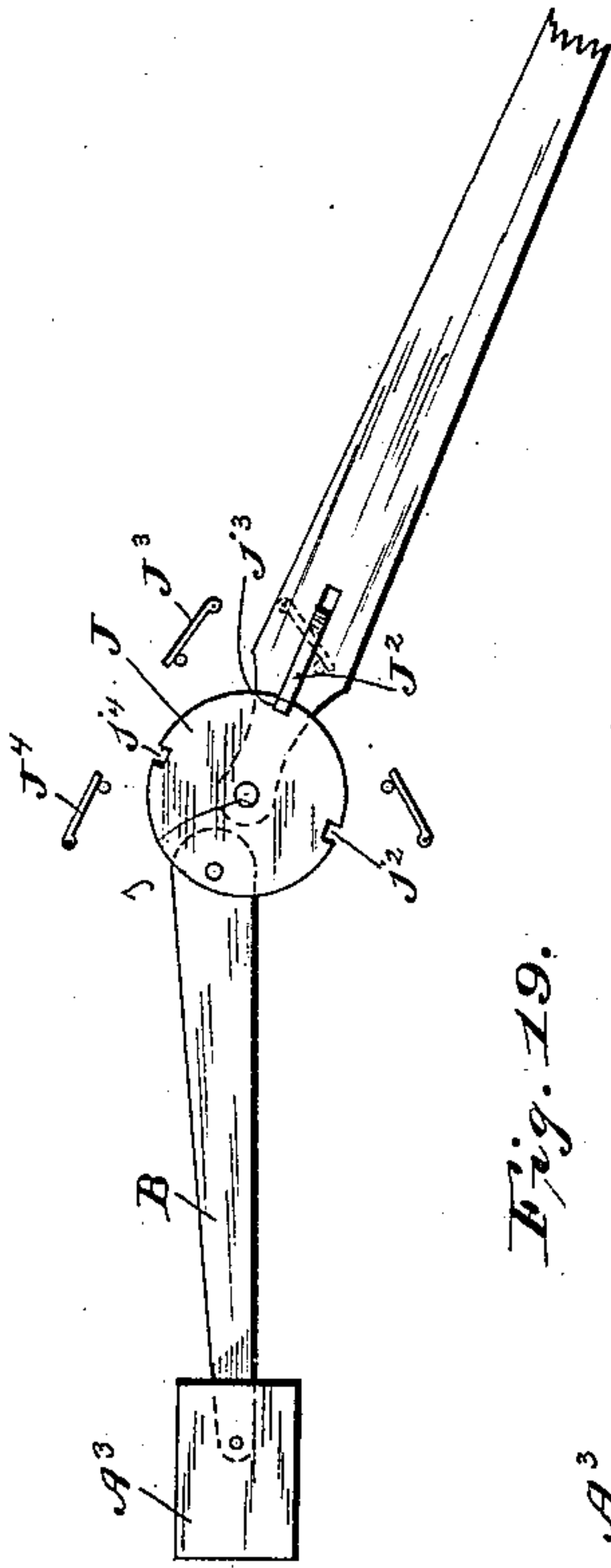
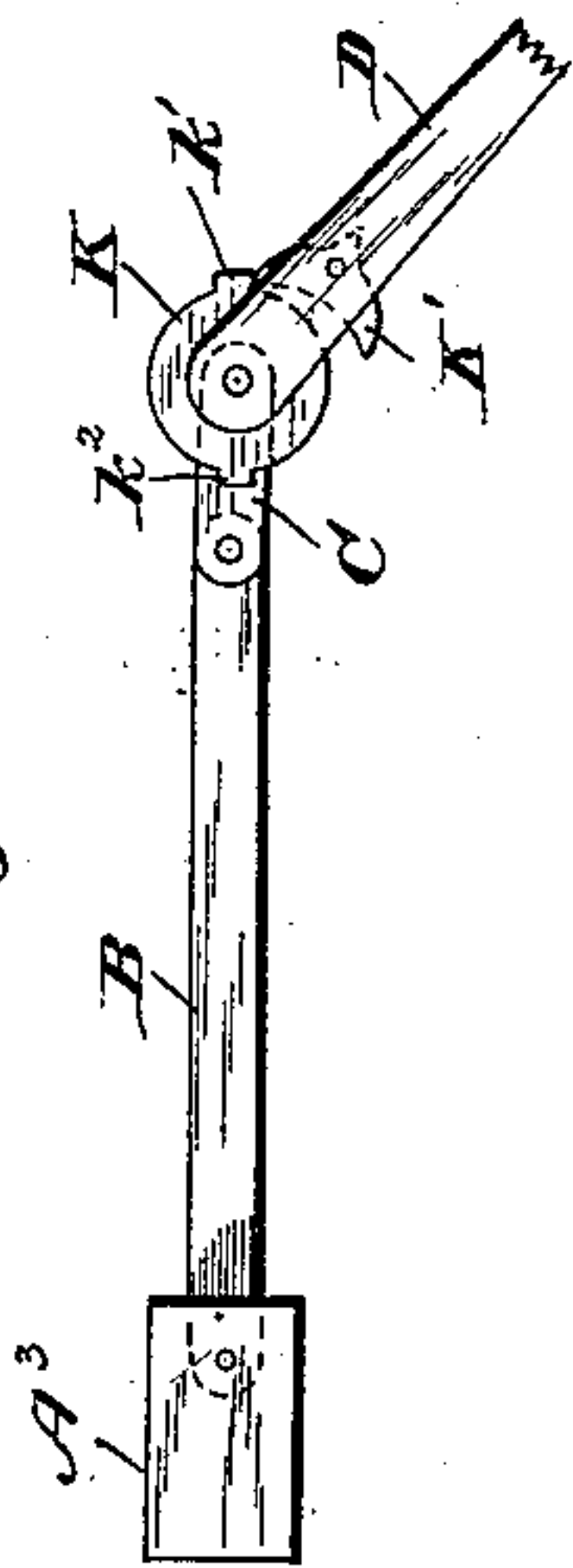


Fig. 19.



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# UNITED STATES PATENT OFFICE.

PETER K. DEDERICK, OF LOUDONVILLE, NEW YORK.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 334,004, dated January 12, 1886.

Application filed October 20, 1885. Serial No. 180,448. (No model.)

*To all whom it may concern:*

Be it known that I, PETER K. DEDERICK, of Loudonville, in the county of Albany and State of New York, have invented certain  
5 new and useful Improvements in Baling-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of refer-  
10 ence marked thereon.

This invention relates to improvements in powers for baling-presses, and has particular reference to that class of baling-presses known  
15 as "perpetual" or "continuous" presses, in which the bales are formed or built up in sections by the operation of a reciprocating traverser or plunger within a press-case, acting upon successive charges of material fed to the  
20 press, and in which the power of the horses is applied through a reversible sweep or horse-lever.

In the most approved form of "reversible" presses, so called, as heretofore constructed,  
25 but one reciprocation of the traverser is effected by the movement of the sweep or horse-lever in one direction, the result being that only a single charge of material is pressed during the travel of the horse from one ex-  
30 treme of his movement to the other.

The object of my present invention is to increase the capacity of such a press by multiplying the number of reciprocations of the traverser produced during or by a complete  
35 movement of the horse-lever or sweep in either direction. This multiplication of strokes I accomplish by combining with the pitman connected to the traverser and with a vibrating horse-lever or sweep suitable connections be-  
40 tween the said sweep and pitman for causing the latter to approach and recede from a central line twice or oftener at each movement of the horse-lever in either direction, thereby effecting the desired result.

For the purpose of giving a clearer idea of the nature and scope of my invention, I have shown herein several of the many forms in which it may be embodied, not intending, of  
45 course, to limit myself to any particular embodiment, special features of construction being reserved for other applications.

Referring to the drawings, Figure 1 is a view in perspective of a press to which my invention is applied in one of its forms. Fig. 2 is a side elevation, and Fig. 3 a plan view, of the  
55 form of power shown in Fig. 1. Figs. 4 and 5 represent modifications of the embodiment of the invention as shown in Figs. 1 and 2. Fig. 6 represents another form of the invention, and Fig. 7 a modification of the same. 60  
Figs. 8, 9, and 10 are views of another form of the invention with the parts in different positions. Figs. 11 and 12 represent a modification of the embodiment shown in the last three figures. Fig. 13 illustrates another form, 65  
and Fig. 14 a slight modification thereof. Figs. 15 and 16 represent another form of the invention. Fig. 17 represents another form. Figs. 18 to 22 represent still another form; Fig. 23, a modification of the last-mentioned 70  
form. Fig. 24 illustrates a form of the invention in which the movement of the pitman is controlled without the aid of a crank or crank-arms, and Fig. 25 is a view of one form of au-  
75 tomatic reversible pawl such as may be employed.

Similar letters of reference in the several figures indicate the same parts.

I have shown in Fig. 1 the application of my invention to a continuous or perpetual  
80 press. The construction of presses of this type is so well known that herein I will only refer by letter to some of its principal parts.

A is the condensing-chamber, in which the material to be baled is fed and preliminarily  
85 condensed.

A' is an automatic feeder for carrying the condensed charges down into the press-box A<sup>2</sup>, from whence they are forced by the traverser A<sup>3</sup> into the bale-chamber A<sup>4</sup>, where they  
90 are built up into bales, the latter being tied off and ejected through the open end of the bale-chamber as the operation proceeds.

No part of the press-frame nor the particular construction of the condensing mechanism  
95 nor the automatic feeder is herein claimed, since they form the subjects of prior patents or pending applications.

B represents the pitman, jointed at its inner end to the traverser, so that its outer end  
100 may be vibrated back and forth across a central line, being controlled in its movements by



suitable guides—such, for example, as swinging crank-arms C, as shown in Fig. 1, or fixed guides L, as shown in Fig. 24.

D is the horse-lever or sweep. In all the forms of the invention herein shown this horse-lever is arranged to vibrate across a central line and through connections, which constitute the gist of my invention, to operate upon the pitman in a manner to cause it to approach and recede from the central line, and thus produce reciprocations of the traverser.

In the form of the invention shown in Figs. 1, 2, and 3 the pitman is connected to and guided by the swinging crank-arms C, pivoted at *c*, and the horse-lever is pivoted at a point, *d*, in front of the pivot of the crank-arms. Upon the head of the horse-lever are arranged two bearings, *D'* *D*<sup>3</sup>—one on each side, as shown in Fig. 3—while at an intermediate point is arranged a third bearing, *D*<sup>2</sup>.

In the dotted lines, Fig. 3, the parts are shown in the position they occupy when the traverser is withdrawn and the horses have reached one extreme of their movement and are about to reverse. It will be observed that at this time the intermediate bearing, *D*<sup>2</sup>, rests against one side of the crank-arms C. As the horses now move toward the opposite side, in the direction indicated by the arrow, the pressure of the bearing *D*<sup>2</sup> upon the crank-arms causes the latter and the pitman to be brought up toward the central line. By reason of the crank-arms and the horse-lever being pivoted on different centers, the intermediate bearing on the horse-lever is caused to travel toward the outer end of the crank-arms as the operation proceeds, and when the crank-arms and pitman are nearly but not quite in line the said intermediate bearing passes beyond the end of the crank-arms, thus releasing the latter, whereupon the expansion of the pressed material, acting through the traverser and pitman, throws the crank-arms back to first position and in front of one of the bearings *D'* or *D*<sup>3</sup>, and the latter, under the continued movement of the horse-lever, in like manner carries the crank-arms up to and this time past the central line, so that the expansion of the pressed material will throw the crank-arms back upon the opposite side and in position to be acted upon by the intermediate bearing, *D*<sup>2</sup>, when the horse lever is reversed. It will be seen that with this contrivance two reciprocations of the traverser are effected at each movement of the horse-lever in either direction.

The intermediate bearing, *D*<sup>2</sup>, instead of being fixed to the head of the horse-lever, may be arranged to have an independent movement. To this end it may be constructed in the form of a swinging bearing, *D*<sup>4</sup>, limited by stops *d'*, as shown in Fig. 4, or in the form of a sliding bearing, *D*<sup>5</sup>, working within a slot, *d*<sup>2</sup>, Fig. 5. The effect of thus making the intermediate bearing movable is to allow the swinging crank-arms to be thrown back farther when forced past the central line.

In form of the invention shown in Fig. 6 the pitman is extended past the point of connection with the crank-arms, and with it cooperate three bearings, *F'* *F*<sup>2</sup> *F*<sup>3</sup>, corresponding to the three bearings *D'* *D*<sup>2</sup> *D*<sup>3</sup>. These three bearings are formed upon the sliding bar *F*, which is reciprocated back and forth by the operation of the vibrating horse-lever through the medium of a drum, *F*<sup>4</sup>, and chains *F*<sup>5</sup>.

Instead of the projections being formed upon a bar, as shown in Fig. 6, stops *f'* *f*<sup>2</sup> *f*<sup>3</sup> may be secured directly to a chain, as shown in Fig. 7. The number of intermediate bearings may be increased, so as to multiply the strokes of the pitman at each movement of the horse-lever, as will be readily understood.

Figs. 8, 9, and 10 illustrate in different positions another type of the invention. The pitman, horse-lever, and crank-arms are lettered B, D, and C, respectively, as before. The crank-arms in this example swing upon the pivot *d* of the horse lever. In Fig. 8 the parts are shown in the position which they occupy when the horse-lever commences to move from one side to the other. As the horse-lever advances, its point of contact with the pitman moves along the extension of the latter, and when the pitman and crank-arms are brought nearly in line the end of the horse-lever, by reason of the length of the crank-arms, is carried beyond and out of contact with the end of the pitman, as shown in Fig. 9, and the pitman, being thus released, is thrown back by the expansion of the pressed material into the position shown by the dotted lines in Fig. 9, and takes another bearing on the horse-lever. Then, as the horse-lever continues to move in the same direction, it carries the pitman up to and over the center line, as shown in Fig. 10, the back expansion then throwing it to the opposite side, as shown by dotted lines in Fig. 10, in position to be operated upon in a similar manner when the horse-lever is reversed. In this embodiment it will also be observed that two reciprocations of the traverser are effected at each movement of the horse-lever.

In the modification shown in Figs. 11 and 12 the extended end *g* of the pitman is grooved on opposite faces, as shown, for the passage of the bearings or shoulders *g'* on the bifurcated or slotted end *g*<sup>2</sup> of the horse-lever. In starting, these bearings or shoulders *g'* rest against the extended end of the pitman, and as the horse-lever moves from one side toward the other they are carried around said extended end, forcing the traverser forward until the crank-arms are brought near the center line, when the said bearings enter the grooves in the pitman and permit the latter to be thrown back to the starting-point, during which operation the extended end of the pitman passes between the arms of the horse-lever. The movement of the horse-lever being continued, the pitman is carried up to and across the center-line, as before described.



Fig. 13 shows a construction in which the crank-arms and horse-lever are mounted upon independent pivots, and a bearing, H, on the horse-lever is adapted to engage with an extension, H', of the crank-arm, for the purpose of bringing the pitman and crank-arms nearly to the center line, and then releasing them to make the first stroke during the movement of the horse-lever, the latter itself or a projection upon it being relied upon to carry the pitman and crank-arms up to and past the central line for the second stroke during the continued movement of the horse-lever.

In Fig. 14 the same result is accomplished as in Fig. 13 by mounting the horse-lever upon an axis, h, eccentric to the axis h', upon which the crank-arms are mounted.

As shown in Figs. 15 and 16, the same effects may be obtained by employing a pivoted head, I, having bearings i i for engaging the pitman on opposite sides of the center. Said pivoted head is detachably connected to the horse-lever by means of a latch or bolt, I', which engages with one or the other of two notches, i', in the said pivoted head.

Fig. 15 shows the position of the parts at the commencement of the movement of the horse-lever, the latch or bolt I' being in engagement with the notch i'. As the horse-lever proceeds, the bearing i, which may be a roller, exerts pressure against the extended end of the pitman, and causes the latter and crank-arms to be brought nearly to the central line, at which point a cam, I'', or other suitable device or mechanism, operates to withdraw or disengage the bolt I', whereupon the back expansion of the pressed material carries the pitman, crank-arms, and pivoted head back toward the position from whence they started, the latch or bolt I' engaging automatically with the notch i'' on the opposite side of the head, and thereby causing the horse-lever, in the continuation of its movement, to force the pitman and crank-arms up to and this time over the central line, and to a position on the other side corresponding to the first position.

In the modification illustrated in Fig. 17 the pitman, instead of being attached to loose crank-arms, is connected directly to a pivotally-supported head, J, (preferably composed of two plates or disks mounted upon separate studs or axles j', and with the pitman located between them,) and said head is provided with notches j'' j''' j'', to receive a sliding bolt or catch, J, on the horse-lever. The full lines indicate the position of the parts when the movement of the horse-lever commences, the sliding bolt being in engagement with the intermediate notch, j'''. By the time the pitman has been brought nearly up to the central line the sliding bolt J'' will be thrown out by a trip—such, for instance, as shown at J''—thus permitting the head to rotate backward, under the influence of the back expansion of the pressed material, until its notch j'' in turn becomes engaged with the sliding bolt, and the horse-lever, con-

tinuing to advance in the same direction, then causes the head to be again rotated until the pitman is carried up to and beyond the central line, whereupon the bolt J'' is again disengaged from the head by the action of another trip, J''. As the head is released, this time the back expansion throws the pitman out at the opposite side of the press and brings the intermediate notch, j'', again into position to be caught by the bolt or latch preparatory to the reversal of the horse-lever. Two strokes of the pitman are effected by this construction at each throw of the horse-lever, as before.

In all the embodiments of the invention hereinbefore described in the stroke of the traverser first occurring during a single movement of the horse-lever in one direction, the pitman is caused to approach the central line and is then released and forced back toward the point from whence it started, while in the second stroke of the traverser, occurring during the same movement of the horse-lever, the pitman is carried up to and past the central line and into position on the other side to operate in like manner upon the reversal of horse-lever. In other words, the pitman, during each movement of the horse-lever from one extreme to the other, first moves up to the central line and back again, and is then projected over the central line to a position on the opposite side corresponding to the position first occupied. In Figs. 18 to 22, inclusive, however, is shown a construction in which, during the continued movement of the horse-lever in either direction, the pitman is caused to pass the central line at both strokes of the traverser occurring during said movement of the horse-lever, instead of at the second stroke only, as in the other forms of the invention.

Referring to said last mentioned figures, it will be observed that there is connected to the swinging crank-arm or its shaft a disk or head, K, having oppositely-arranged projections k' k'', while upon the horse-lever there is mounted a double pawl or dog, K'.

In Fig. 18 the parts are shown in position with the horse-lever at one extreme of its movement. Starting in the direction indicated by the arrows, with the pawl behind the projection k', the horse-lever operates to bring the pitman to the central line, as shown in Fig. 19, then carry it over the center when the expansion of the pressed material throws it and its connected parts around into the position shown in Fig. 20, thereby completing the first stroke and bringing the other projection, k'', in front of the pawl, so that by the continued movement of the horse-lever the pitman will be again carried up to the central line, as shown in Fig. 21, and over the same far enough to enable the traverser to be reversed by the expansion of the pressed material. As the pitman is thus forced past the central line the second time, the pawl is automatically tripped or reversed to bring its opposite end in position for engagement with the



projection  $k'$ , as shown in Fig. 22. Any well-known form of automatic reversible pawl may be employed—for example, such as shown in Fig. 25, in which the pawl is provided with  
 5 an angular projection or shoulder,  $k^5$ , against which the angular point of a spring-bolt,  $k^6$ , works. The pawl is also provided with an arm or arms,  $k^7$ , which, at the termination of the movement of the horse-lever in either di-  
 10 rection, make contact with a projection on the frame, whereby the pawl is reversed.

This last-described form of the invention is also susceptible of being operated so as to cause the pitman to move up to the central line and back again, and then past the central line at the second stroke, as heretofore de-  
 15 scribed, by tripping the pawl just before the pitman reaches the central line the first time in each movement of the horse-lever.

20 If deemed desirable, the disk or head K may be provided with a series of projections or teeth, as shown in Fig. 23, instead of with two only, as shown in the other figures.

In all the previously-described forms of the  
 25 invention the outer end of the pitman is guided and controlled in its movements by means of swinging crank-arms; but any other contrivance which will serve to guide the said end of the pitman and maintain its operative rela-  
 30 tion to the other parts may be substituted. For instance, the pitman may be provided with projections adapted to work in a guideway arranged in or attached to the frame of the press. Fig. 24 shows a construction in which such a  
 35 guideway is employed. Said guideway is represented by the letter L, and the projections on the pitman by the letter  $L'$ . The horse-lever or sweep is pivoted at  $L^2$ , and is provided with two bearings,  $l^3$ —one on each side—and an in-  
 4c termediate bearing,  $l^2$ , which bearings are in succession adapted to act upon the end of the

pitman to carry it first up near the center, then release it and allow it to spring back, and then carry it over the center and allow it to spring  
 45 back on the opposite side.

The full lines represent the position at the start, and the dotted lines the position of the parts as the intermediate projection is passing out of contact with the pitman and just before the completion of the first stroke.  
 50

The special devices herein shown in illustration of the generic invention, forming the subject-matter of this application are not herein claimed, as they are embodied in separate applications, Serial Nos. 135,028, 137,578, 55 180,080, and 183,735.

I claim as my invention—

1. In a baling-press, the combination, with a reciprocating traverser, of a pitman connected thereto, a guide for controlling the  
 60 movement of the outer end of the pitman, a vibratory horse-lever or sweep, and intermediate connections between the horse-lever and pitman for causing the latter to approach and recede from a central line twice or oftener at  
 65 each movement of the horse-lever in either direction, substantially as described.

2. In a baling-press, the combination, with a reciprocating traverser and its attached pitman, of a guide for the outer end of the pitman, -  
 70 a vibrating horse-lever, bearings for forcing the pitman past the central line in opposite directions, and an intermediate bearing, operating as described, to carry the pitman toward the central line during a portion of the traverse  
 75 of the horse-lever in either direction and release it alternately on opposite sides of the center, substantially as described.

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Witnesses:

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