

(No Model.)

2 Sheets—Sheet 1.

T. TAYLOR.
MECHANICAL MOVEMENT.

No. 285,178.

Patented Sept. 18, 1883.

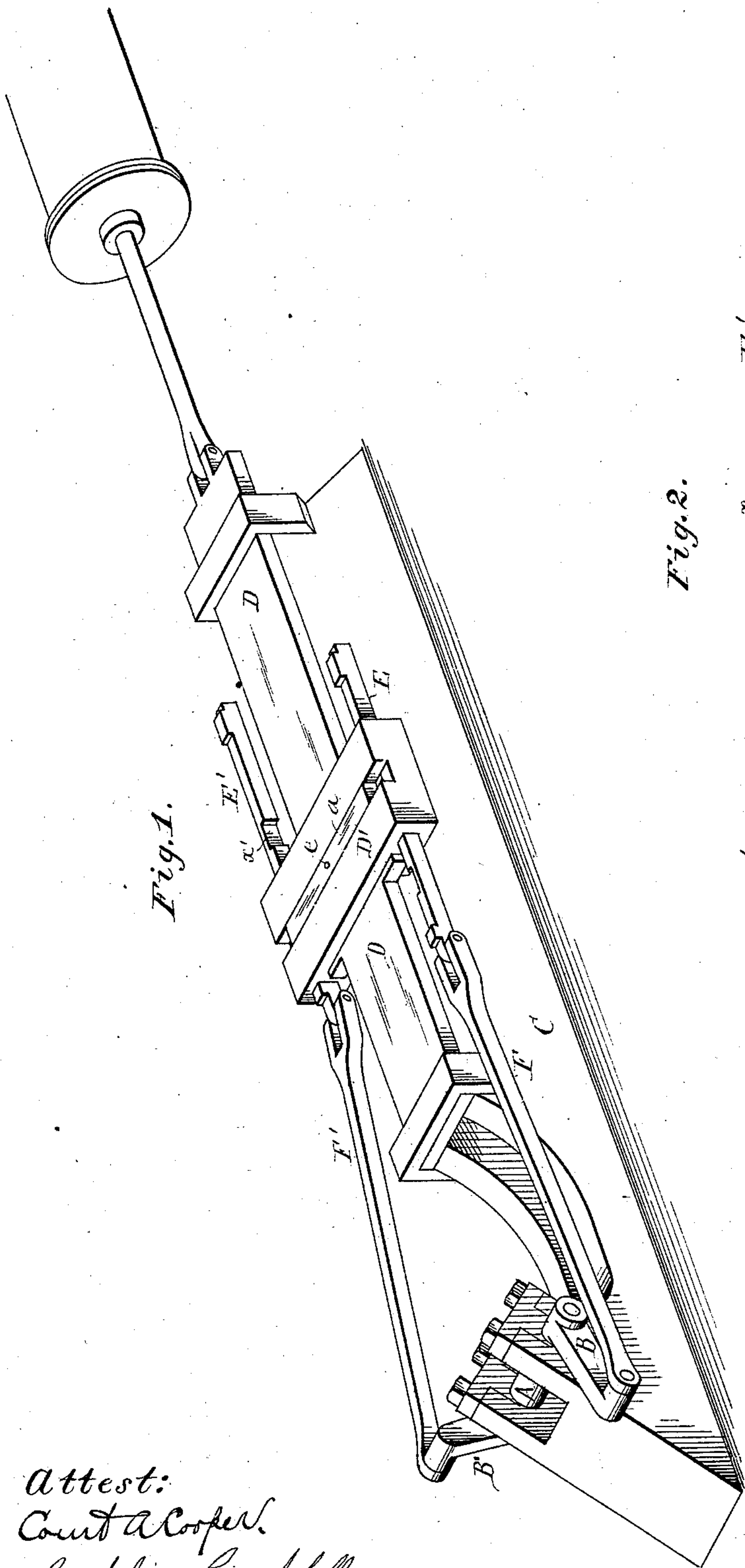
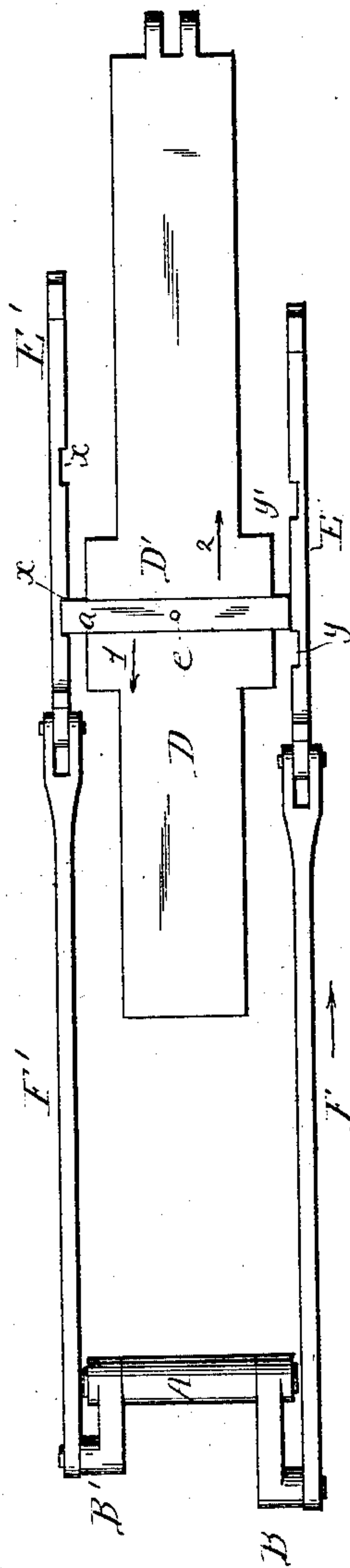


Fig. 1.

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Court A. Cooper.
Josephine Campbell.



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Attys

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Fig. 5.

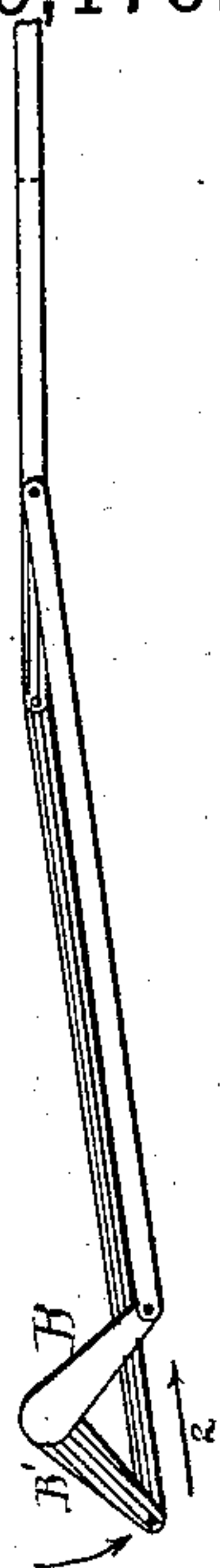


Fig. 6.

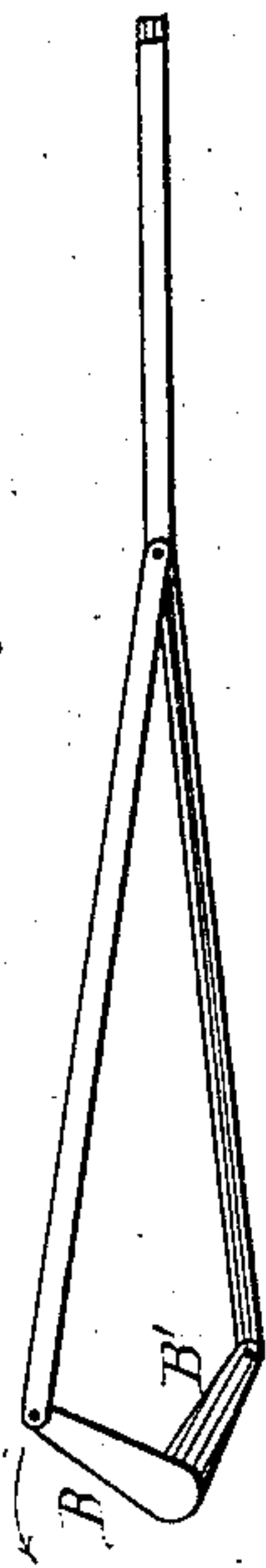


Fig. 3.

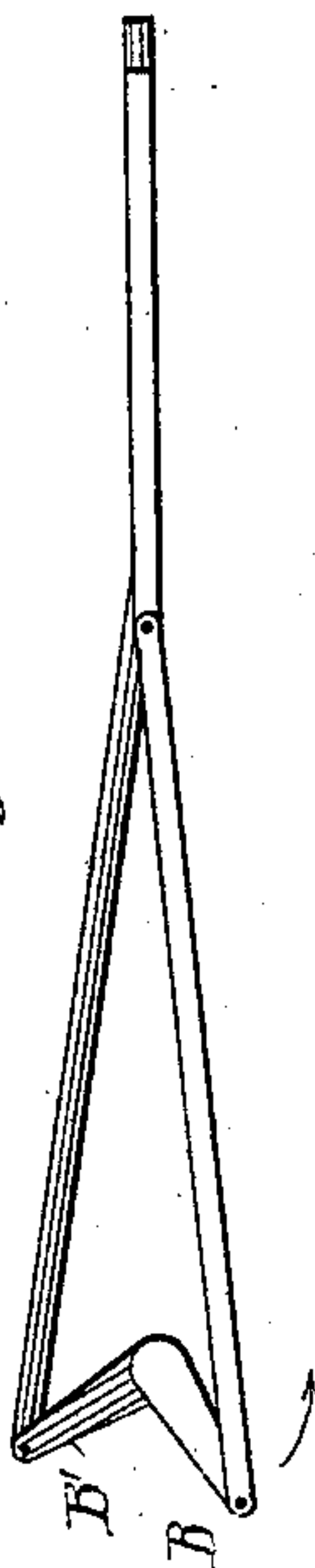


Fig. 4.

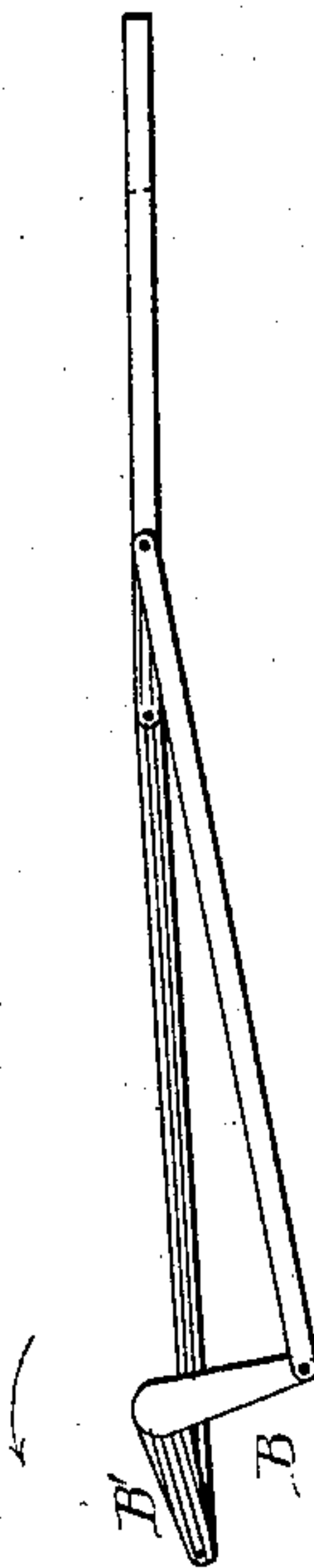
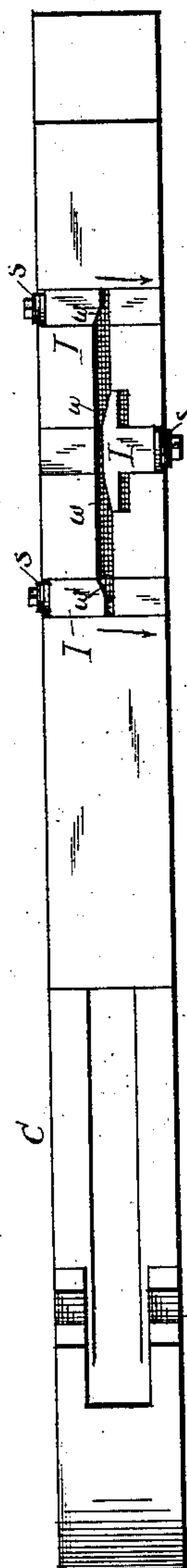


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS TAYLOR, OF CASANOVA, VIRGINIA, ASSIGNOR OF ONE-HALF TO
GEORGE B. LAWRASON, OF NEW ORLEANS, LOUISIANA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 285,178, dated September 18, 1883.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS TAYLOR, a citizen of the United States, and a resident of Casanova, Fauquier county, Virginia, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

My invention is a device whereby I am enabled to convert a reciprocating into a rotary motion, or vice versa, without possibility of a dead-center, the said device consisting, generally, of a shaft with cranks at different angles, a head to which a reciprocating motion is imparted, and connecting-rods and pitmen alternately locked to said head at such times that the movement of the head will always be exerted upon the crank which is off the center. The device thus constructed constitutes a new mechanical movement adapted for use in many different classes of machines, either hand-machines or power-machines, but in the accompanying drawings is shown in connection with a steam-engine.

In said drawings, Figure 1 is a perspective view illustrating the said device. Fig. 2 is a plan view of the working part. Figs. 3 to 6 are diagrams; Fig. 7, a plan of base detached.

The device consists, essentially, of a shaft, A, having two cranks, B B', at right angles to each other, said shaft turning in bearings upon the frame C, a reciprocating rod, bar, or plate, D, slide-bars E E', carried by said plate, and rods F F', connecting the bars, respectively, to the cranks. As shown, the plate D is widened at the center to constitute a cross-head, D', through openings in which the bars slide, and with the cross-head and bars is combined a suitable locking device, whereby each bar may be locked to the cross-head, except at the time when the crank connected to such bar is nearly in line therewith. By this means the reciprocation of the cross-head is the means of sliding the bars and turning the cranks by a power applied only when the cranks are in position to be effectively operated thereby, the force being upon one crank nearly at right angles when the opposite crank is nearly upon its center and subjected to no force whatever. This will be best understood on reference to Figs. 2 to 6. In Fig. 2 the cross-head is

locked, through the medium of a sliding bolt, *a*, carried thereby, to the bar E', which has two notches, *x x'*, the bolt extending into the notch *x*. The movement of the cross-head in the direction of its arrow 1 carries with it the bar E' and conveys the force to the crank B', which is in the best position to receive it—that is, fully off its center, Fig. 1—while the crank B, moving to and across its center, Fig. 3, slides the bar E freely in the cross-head backward in the direction of its arrow. This motion continues until the crank B' approaches its center, when a notch, *y*, of the rod-bar E will be brought opposite the bolt *a*, when the latter will enter the notch *y* and leave the notch *x* just at the time that the head D' changes its motion. The backward action of the head in the direction of its arrow 2 will now carry with it the bar E, operating effectively upon the crank B, while the shaft continues its motion, carrying the crank B' to the position shown in Fig. 4, the rod E' sliding freely in the cross-head. When the continued backward movement brings the bolt *a* opposite the notch *x'*, it will slide into the latter and out of the notch *y*, the cranks then being in the position shown in Fig. 5, and the draft will be upon the crank B' in the direction of the arrow 2, while the crank B approaches a horizontal position, and will continue until the crank B' has attained the position shown in Fig. 6, when the bolt will enter the notch *y'*, and the reverse movement of the cross-head in the direction of the arrow 1 will carry the bar E and its connecting-rod forward.

Any suitable means may be employed for shifting the bolt to make the connections described with the bars at the required intervals. For instance, a central pin, *e*, upon the bolt may at the time of transfer strike the inclined sides *w* of a slot in a plate, I, sliding in a transverse recess in the frame, and carried by a spring, *s*, in the direction of its arrow. The contact of the pin with the inclined side will draw back the plate against the pressure of the spring, the force of which, when one of the notches is opposite the end of the bolt, will carry the latter forward into said notch. One of these spring-plates is arranged at each point where the bolt is slid at the termination of

each stroke, and a similar plate, with two inclined faces or edges, is arranged at the center.

I do not limit myself to the locking devices above described, for various appliances may be used for effecting the same result, it only being necessary that they be so constructed and operated as to clamp the bars alternately to the cross-head and maintain a connection until the crank approaches its center, and to then release it.

It will be apparent that my invention is applicable in cases where the shaft has three or more cranks, and that a fly-wheel may or may not be used, as may be deemed advisable, and, as equivalent of the bars sliding in the cross-head, the connecting-rods might be extended to the sides of the cross-head and provided with pins extending laterally into the longitudinal slots in the side edges of the cross-head, suitable locking devices securing said pins, so as to move with said cross-heads at the proper times. In like manner the movement of slide D, representing, for instance, the piston-rod of an engine, might be transferred to the arm of a rock-shaft, and the latter may be provided with two loose cranks connected to the rods F F', and with locking devices whereby said cranks may at proper intervals be clutched to or released from connection with the said rock-shaft.

Without limiting myself to the precise con-

struction and arrangement of parts shown, I claim—

1. A mechanical movement consisting of a crank-shaft having two or more cranks, a reciprocating slide or rod, connecting-rods, and an intermediate device whereby said connecting-rods are alternately attached to and derive their movement from said device, except when the cranks are near or upon their dead-centers, substantially as set forth.

2. The combination of the reciprocating cross-head, shaft having two or more cranks, connecting-rods, and appliances whereby the latter are connected to move with the cross-head alternately, except when their cranks are upon or adjacent to their centers, substantially as specified.

3. The combination of the shaft having two or more cranks, reciprocating head, connecting-rods, bars, and locking devices whereby the said bars are alternately connected to and disconnected from the head, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS TAYLOR.

Witnesses:

CHARLES E. FOSTER,
H. A. HALL.