

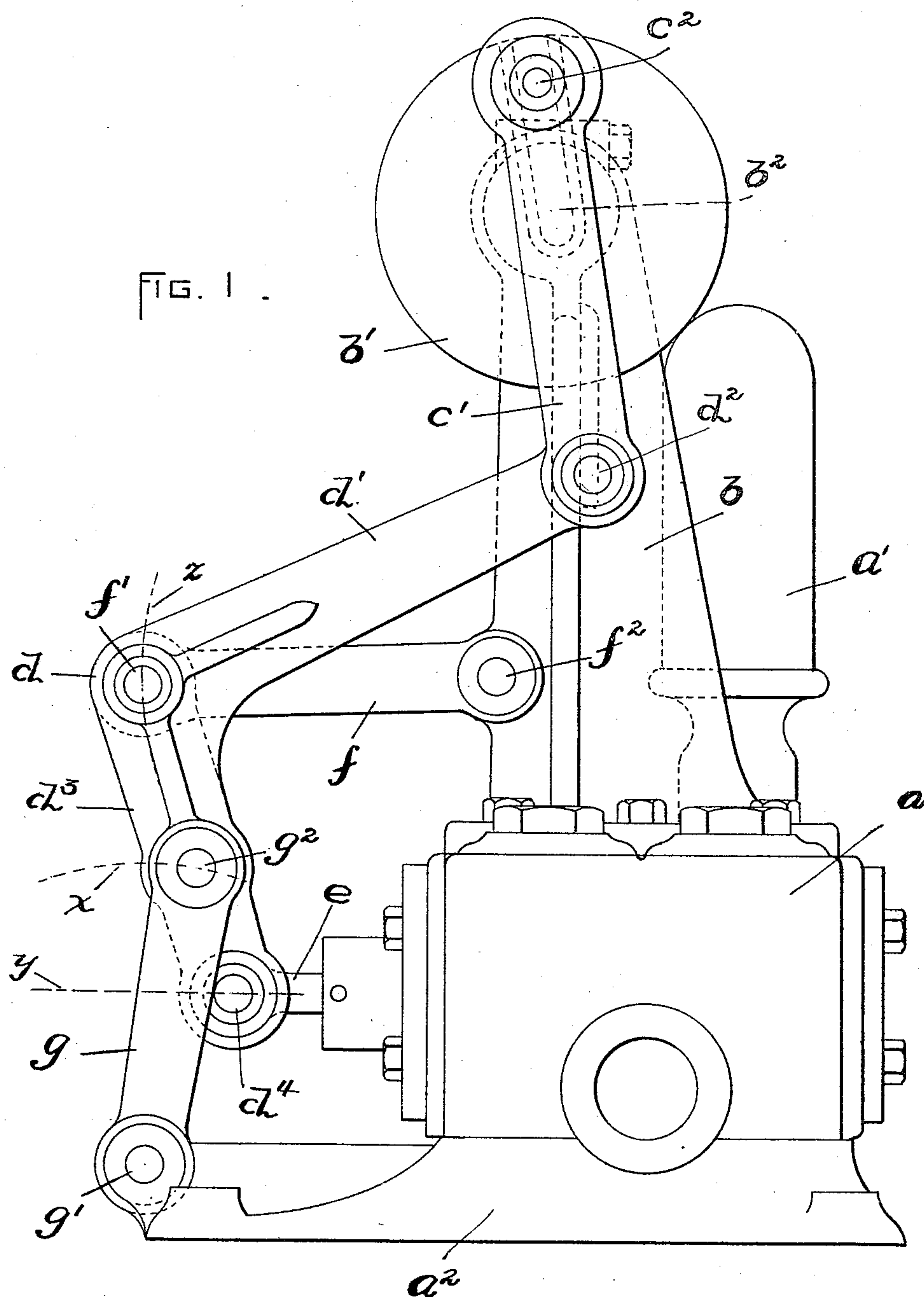
(No Model.)

2 Sheets—Sheet 1.

F. L. STONE.
PARALLEL MOTION.

No. 529,339.

Patented Nov. 13, 1894.



WITNESSES:

A. D. Hanson
President.

INVENTOR:

F. J. Stone
by Knight Brown Crossley
Atty!

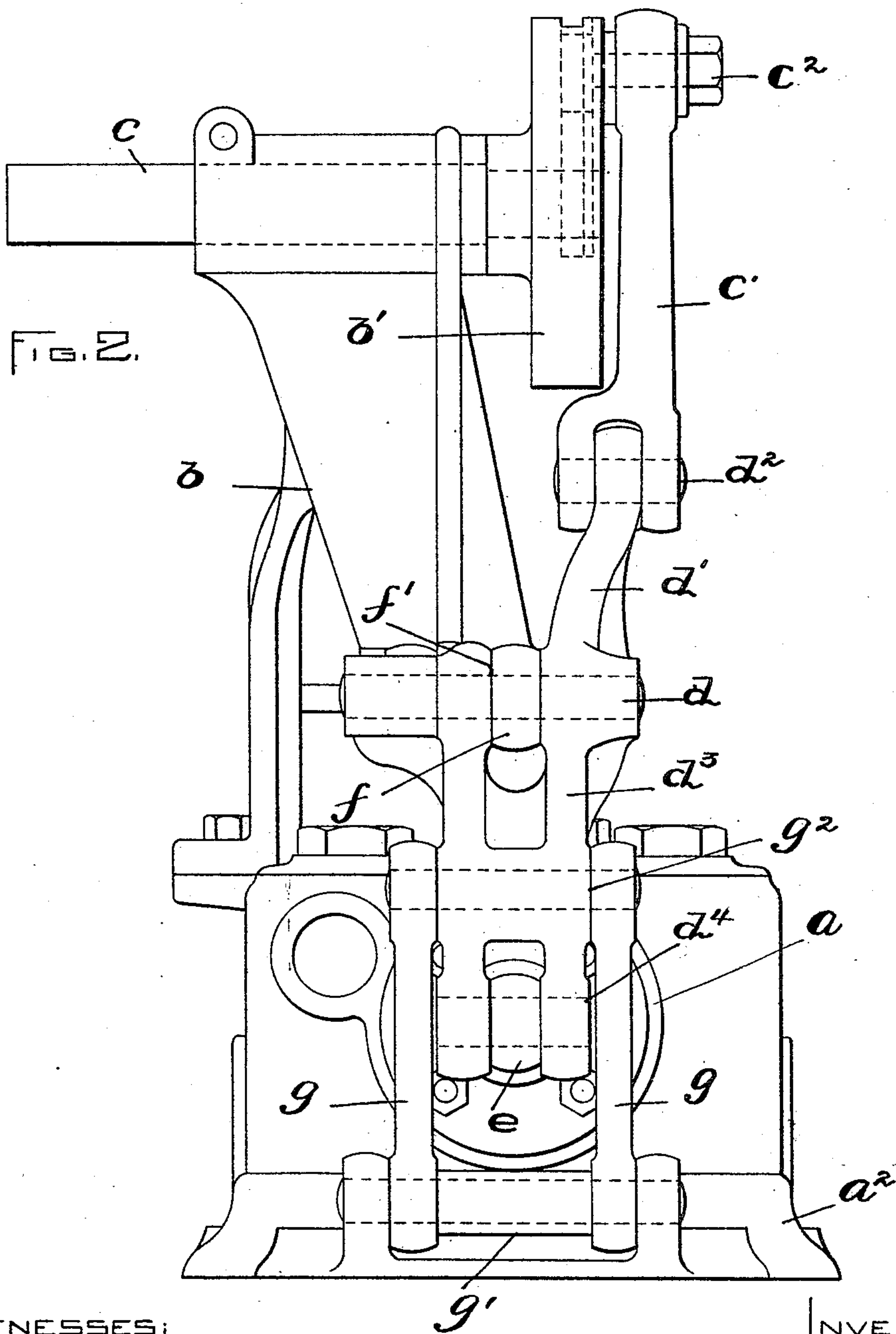
(No Model.)

2 Sheets—Sheet 2.

F. L. STONE.
PARALLEL MOTION.

No. 529,339.

Patented Nov. 13, 1894.



WITNESSES:

A. D. Harrison
 Parker Vaux.

INVENTOR:

F. L. Stone
by Wright Brown Hordley
Atty.

UNITED STATES PATENT OFFICE.

FLORENTINE L. STONE, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO THE BOUVÉ, CRAWFORD & COMPANY CORPORATION, OF SAME PLACE.

PARALLEL MOTION.

SPECIFICATION forming part of Letters Patent No. 529,339, dated November 13, 1894.

Application filed March 27, 1893. Renewed January 23, 1894. Serial No. 497,817. (No model.)

To all whom it may concern:

Be it known that I, FLORENTINE L. STONE, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Parallel Motions, of which the following is a specification.

This invention relates to an improvement in parallel motions for connecting rotary and reciprocating machine elements, and I have here shown it as applied to a power pump for transmitting motion to the piston rod thereof from a rotary driving element, although the invention may be applied to other mechanisms.

The object of the invention is to arrange a system of levers or links connecting the rotary and reciprocating elements which will insure a true rectilinear motion of the reciprocating element, and also a quicker action thereof than could otherwise be obtained.

To this end the invention consists in certain novel constructions and arrangements of parts which will be described and claimed hereinafter.

A construction by which the invention may be applied to a power pump is illustrated in the accompanying drawings.

Figure 1 shows a side elevation of the complete structure. Fig. 2 shows an end view as seen from the left of Fig. 1.

The reference letter, a , designates the cylinder of a power pump which rests on a bed, a^2 ; a' , the usual air-dome thereof; and, b , a standard erected on the upper side of the cylinder. A driving shaft, c , is journaled in a bearing at the upper end of the standard, b , and carries a crank-disk, b' , having a radial adjustment slot, b^2 . A pitman, c' , is fastened on a pin, c^2 , which may be adjusted to different positions in said slot. A bell-crank lever, d , has a long arm, d' , which is pivoted at, d^2 , to the outer end of the pitman, c , and a shorter arm, d^3 , which is pivoted at, d^4 , to the piston-rod, e , of the pump. The bell-crank lever is pivoted at the junction of its two arms to the outer end of a link, f , as shown at, f' , and the inner end of said link is pivoted at, f^2 , to the rigid standard, b . A link, g , is pivoted

at one end, g' , to the bed, a^2 , and at the opposite end, g^2 , to the middle of the short arm, d^3 , of the bell-crank lever.

The reciprocation of the pitman, c' , caused by the rotation of crank-disk, b' , vibrates the long arm, d' , of the bell-crank lever and produces a corresponding movement of the short arm, d^3 , of said lever. The link, g , being pivoted at one end, g' , to a stationary support, its opposite end, g^2 , which is pivoted to the same arm of the bell-crank lever will describe an arc of a circle as designated by the broken line, x , in Fig. 1, and the link, f , being also pivoted to a stationary support, its outer end which is pivoted to the bell-crank lever at the junction of its two arms, describes an arc of a circle as designated by the broken line, z . The result is a rectilinear movement of the piston-rod, e , as indicated by the broken line, y , by reason of the upward movement of the pivot, g' , in the arc of a circle, in the same degree as the pivot, d^4 , would move downward in the arc of a circle if the pivot, f' , of the bell-crank lever was stationary. This latter pivot is permitted to move upward in a corresponding degree by reason of being supported by the link, f .

It is evident the invention might be carried out by other means than that here illustrated and therefore it is to be understood that the invention is not limited to such means.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A parallel motion for connecting rotary and reciprocating machine elements, the same comprising a pitman connected with the rotary elements, a bell-crank lever connecting said pitman with the reciprocating element, a link pivoted to a stationary support, and to the bell-crank lever at the junction of its arms, and a link pivoted to a stationary support and to one arm of the bell-crank lever.

2. A parallel motion for connecting rotary and reciprocating machine elements, the same comprising a pitman connected with the rotary elements, a bell-crank lever having a long arm pivoted to the said pitman and a short arm pivoted to the reciprocating ele-

ment, a link pivoted to a stationary support
and to the bell-crank lever at the junction of
its two arms, and a link pivoted to a station-
ary support and to the short arm of the bell-
5 crank lever.

In testimony whereof I have signed my
name to this specification, in the presence of

two subscribing witnesses, this 13th day of
March, A. D. 1893.

FLORENTINE L. STONE.

Witnesses:

A. D. HARRISON,
F. PARKER DAVIS.