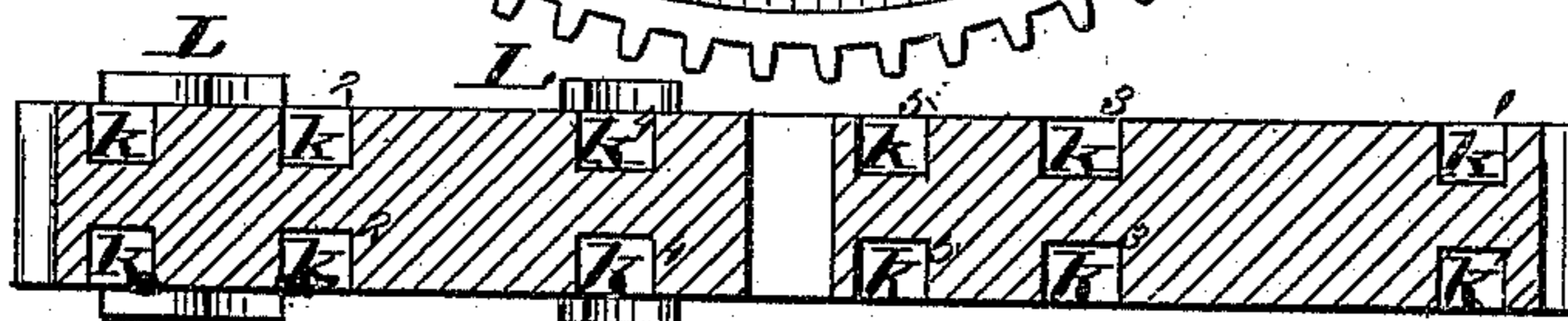


2 Sheets—Sheet 1.

No. 334,989.

Patented Jan. 26, 1886.



Attest,
Geo. L. Wheelock
Samuel H. Knight.

Inventor:
Samuel L. Shellenberger
By Knight Bros.
Attys.

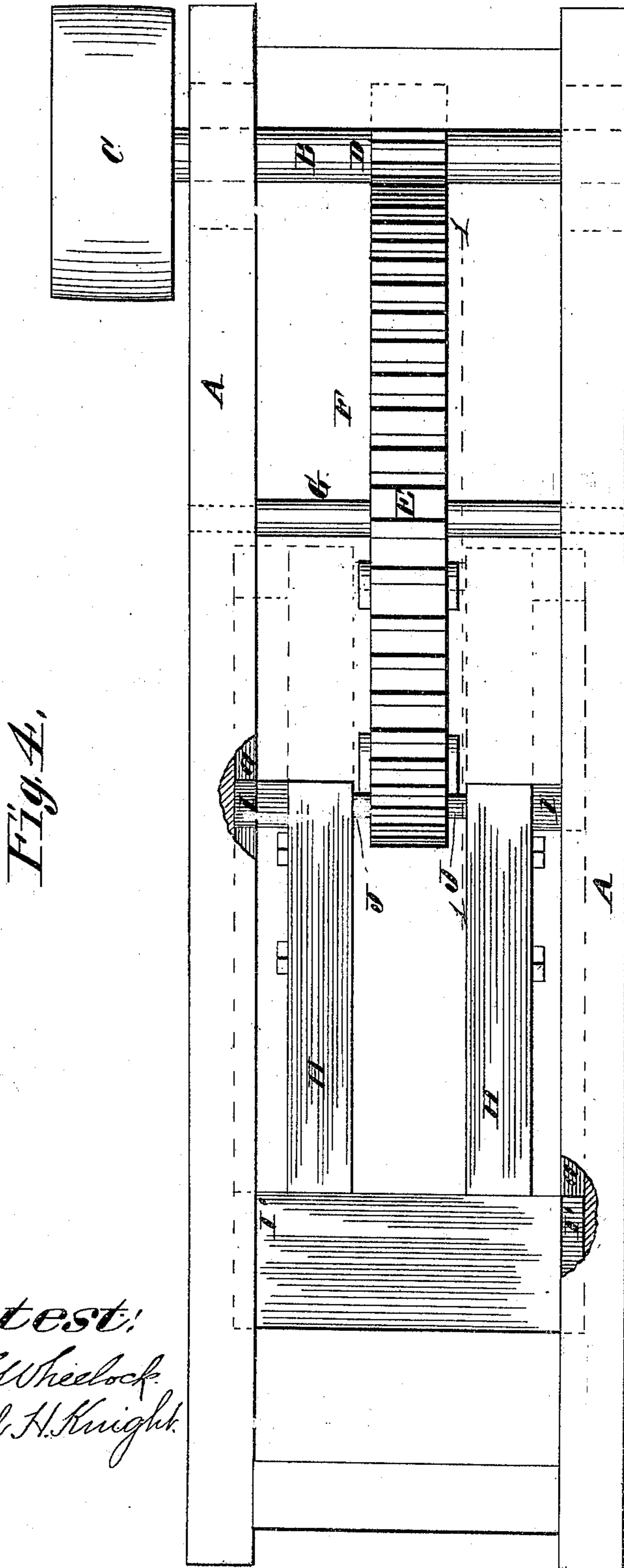
(No Model.)

2 Sheets—Sheet 2.

S. L. SHELLENBERGER.
DEVICE FOR CONVERTING MOTION.

No. 334,989.

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UNITED STATES PATENT OFFICE.

SAMUEL L. SHELLENBERGER, OF TYLER, TEXAS.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 334,989, dated January 26, 1886.

Application filed July 23, 1885. Serial No. 172,484. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. SHELLENBERGER, of the city of Tyler, county of Smith, and State of Texas, have invented a certain new and useful Improvement in Devices for Converting Motion, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a device for converting motion; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

This invention consists in a device for converting a regular rotary motion into an irregular reciprocating motion.

As illustrated, and as it will be described, a cam-wheel in three revolutions imparts to a carriage or frame a single forward and retrograde movement; but the device may be constructed to give any number over one of complete movements to the reciprocating frame.

Figure 1 is a detail longitudinal section at 1 1, Fig. 4, showing the cam-wheel in side view. Fig. 2 is a similar view, except that the parts are shown in another position. Fig. 3 is a diametric section of the cam-wheel at 3 3, Fig. 1. Fig. 4 is a top view illustrating my invention.

A is a main frame, which may have any suitable construction.

B is the drive-shaft, driven by a belt on a pulley, C, upon the drive-shaft, or by other means.

D is a spur-pinion on shaft B, said pinion engaging with the teeth E of the cam-wheel F. The cam-wheel shaft G has bearing in the frame A.

H is a reciprocating frame having guides I and I', working in guide-grooves *a* of the main frame. (See Fig. 4.) The reciprocating frame H has studs J, preferably armed with friction-rollers. These studs enter the cam-grooves K upon each side of the cam-wheel, so that the revolution of the cam-wheel causes the reciprocation of the frame H.

I do not confine myself to the exact form of cam-groove which is shown and described, as this may be varied to cause a single complete movement of the reciprocating frame to two, three, or more revolutions of the wheel.

L and L' are switches, substantially the same

in construction and operation, a description of one applying to the other. Each of them has a guide-finger, *l*, and two horns, *l'* and *l''*, against which the stud J acts to shift the switch. The switches turn on pins *l'''*, which may extend through the cam-wheel and form the pivot of the companion switch upon the opposite side, it being understood that the cam-groove is preferably made similar on both sides of the wheel, so as to more effectually drive the frame H without side strain upon either the frame or the wheel. Of course in some situations this would not be feasible, as both sides of the wheel could not be reached by the same appliance. The pin *l'''* may be fast in the wheel and the switch loose upon it, or the switch may be fast upon the pin and the pin turn in the wheel.

The stud will be described as moving in the cam-groove, as a matter of convenience, although of course the wheel turns and the studs have a simple reciprocating movement in a straight line.

The switches act to turn the studs into a different groove each time they pass a switch, the horns *l'* *l''* being engaged by the stud and turning the switch on its pivot, and throwing the guide-finger *l* into the position required. The ends of the guide-fingers enter recesses M at the sides of the cam-grooves, so that the side of the finger which is brought into action may be in line with the side of the groove along which the stud is approaching the switch.

To decide the action of the device the studs J will be supposed to be in the position shown at K, Fig. 1. The wheel turning one-half a rotation in the direction indicated by the arrow brings the stud into position K'. (See Fig. 2.) It will be seen that during this semi-rotation the carriage or frame H has remained at rest. Another semi-rotation brings the studs to K², and during this movement of the wheel the studs have come in contact with the inner horn, *l'*, of the switch L, and in passing has moved it from the position shown in Fig. 2 to the position shown in Fig. 1. At the last semi-rotation of the wheel the frame has been drawn backward the distance from K to K². The next semi-rotation brings the studs to K³, the frame H continuing to move backward. The next semi-rotation brings the studs to K⁴, during which the carriage or frame H has moved

backward a short distance, and the stud has impinged against the inner horn, l' , of the switch L' and moved it from the position shown in Fig. 2 to that shown in Fig. 1. Another semi-rotation of the wheel brings the studs to K^5 , the carriage or frame H continuing to retreat. The next semi-rotation of the wheel carries the studs to K , the carriage H moving with comparative rapidity forward the distance from K^5 to K , (in a straight line.) In this last movement the studs have come in contact with the outer horns, l^2 , of the switches, and have reversed them from the position shown in Fig. 1 to that shown in Fig. 2.

15 In the device as shown and described the carriage is at rest during a semi-rotation of the wheel, is moving backward during two rotations, and is moving forward during one half-rotation. These movements may evidently be reversed or modified by reversing the position of the carriage end for end upon the wheel, or by modifying the cam-groove.

I claim—

1. A wheel having upon its side a continuous cam-groove forming two or more circuits around the center of the wheel.

2. A wheel having upon its side a continuous cam-groove forming two or more circuits around the center of the wheel, with devices to switch a stud at the intersection or intersections of the cam-groove.

3. A wheel having a continuous cam-groove upon its side forming more than one circuit around the center of the wheel, and having at the point or points of intersection of the groove a switch having a guide-finger, l , and horns l' and l^2 , substantially as and for the purpose set forth.

4. The combination, in a cam-wheel, of a continuous groove on the side of the same extending in two or more circuits around the center of the wheel, and one or more turning switches having horns l' l^2 , which are by the turning of the switch thrown alternately in the course of a stud traversing said groove, a guide-finger, l , and recesses M in the sides of the grooves to receive the end of the finger.

SAMUEL L. SHELLENBERGER.

Witnesses:

SAML. KNIGHT,
BENJN. A. KNIGHT.