(No Model.)

# A. H. KIRK & W. J. FENDER.

## DEVICE FOR CONVERTING MOTION.

No. 302,265. Patented July 22, 1884.

Fig. 1

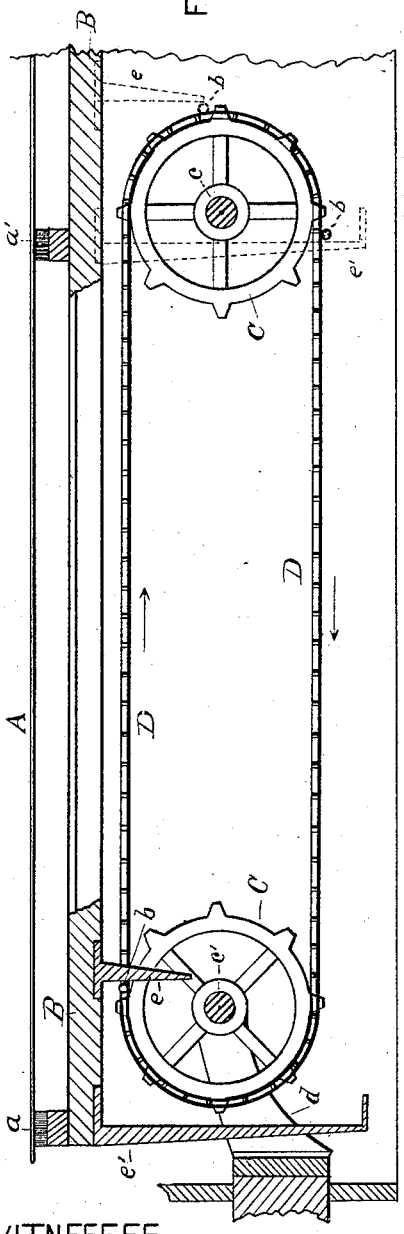



Fig. 3

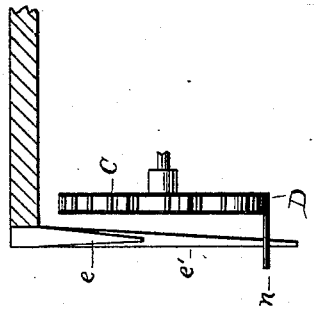
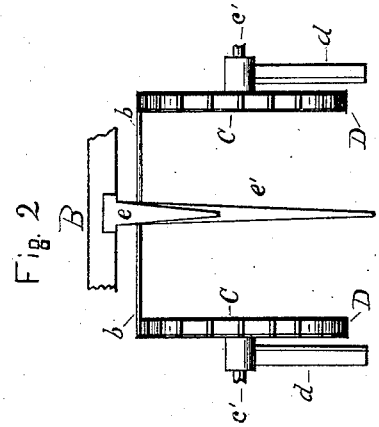



Fig. 2




WITNESSES

Howard Paige

J. Frank Collom

INVENTORS

Alva H. Kirk and
William J. Fender
By Patrick H. Gunckel
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

# UNITED STATES PATENT OFFICE.

ALVA H. KIRK AND WILLIAM J. FENDER, OF MINNEAPOLIS, MINNESOTA.

## DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 302,265, dated July 22, 1884.

Application filed June 9, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, ALVA H. KIRK and WILLIAM J. FENDER, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Mechanism for Converting Rotary into Reciprocating Motion, of which the following is a specification.

Our invention relates to improvements in mechanism for converting rotary into reciprocating motion; and the object of the invention is to provide simple and durable devices for effecting such conversion of motion. This object is attained by means of the mechanical devices illustrated in the accompanying drawings, in which—

Figure 1 represents a broken side view, partly in section, of the half-length of a middlings-purifier, showing the bolting-cloth, the brushes for cleaning the cloth, and our mechanical devices for reciprocating the brushes. Fig. 2 is a transverse view of Fig. 1, showing only the devices for converting and imparting the motion; and Fig. 3 is a modification of the improvements.

The object in showing the improvements as applied to a middlings-purifier is to illustrate one practical application of the invention to a useful purpose, and it is not thereby intended to limit the scope of the invention to the use of the improvements in connection with that class of machinery, nor to the particular form of construction shown in connection with such machinery.

In applying the invention to a middlings-purifier, two sets of sprocket-wheels and two endless chains are used, as shown. They may be placed transversely in the machine instead of lengthwise, as shown.

In the drawings, A represents a bolting-cloth secured in the same machine in the usual manner.

*a a'* are brushes or other cloth-cleaning devices, which are secured on the reciprocating frame B.

*c c'* are transverse shafts, freely revolving in proper bearings attached to the sides of the machine by brackets *d*, or any other well-known means. The shaft *c* is located at or near the center of the length of the machine, and extends entirely across and outside thereof at one or both sides, so that a driving pulley or pulleys to revolve the shaft may be attached to it. The shafts *c'* are short shafts located near one end of the machine, and are made to revolve in proper bearings upon or attached to the brackets *d*.

C C are pairs of sprocket-wheels fast upon the shafts *c c'*, and equidistant from the longitudinal centers of the brush-carriers. They may be placed near such centers, as shown in the drawings, or at or near the ends of the brush-carriers.

D D are endless chains around the sprocket-wheels C C, the open links of which take over the projecting teeth of the sprocket-wheels, and are made to travel in the direction shown in Fig. 1 by arrows.

*b* is a rod secured at each of its ends to the endless chains D D and at right angles thereto.

*e* is a downwardly-projecting lug from the reciprocating frame B, and is of suitable length to reciprocate over the shaft *c* without touching it.

*e'* is another downwardly-projecting lug, located in the rear of the lug *e* and at or near the end of the reciprocating frame, and extending down below the line of the lower peripheries of the sprocket-wheels.

The parts being thus constructed and arranged, motion may be given the shaft *c* and the sprocket-wheels put in revolution, causing the endless chains to travel in the directions shown by arrows in Fig. 1. The cross-bar *b* will engage the lug *e* and force it forward, along with the reciprocating frame B and the cloth-cleaning devices *a a'* thereon, until the lug *e* passes slightly beyond the sprocket-wheels on the shaft *c*, and the bar *b* ceases to engage the lug *e* and passes around to the bottom of the sprocket-wheels. The reciprocating frame B will for a moment remain at rest while the bar *b* is passing from the lug *e* around the sprocket-wheels, and until the bar engages, in its return movement, the longer lug *e'*, by means of which the frame B is carried back to the place of starting. This operation is indicated by dotted lines in Fig. 1. The lugs *e e'* being arranged centrally, and the shafts *c c'* being short and not extending to the center, as shown in Fig. 2, enables the lug *e'* to recip-

rocate between these shafts; and the distance between the lugs *e* and *e'* being greater than half the diameter of the sprocket-wheels on the shaft *c'*, the lug *e'* does not quite reach that shaft in the forward reciprocation. By placing the shaft *c* at the middle of the machine, as described, and having the reciprocating frame but half the length of the machine, a reciprocation of the frame or brush-carriers the full length of the throw will carry the brush or cleaning device *a'* to the extreme end of the bolting-cloth and machine, while the brush *a* is made to reciprocate to the point from which the brush *a'* started. Thus the whole length of the bolting-cloth is operated upon by the cleaning devices.

Instead of employing two endless chains and two sets of sprocket-wheels, as described, it is desirable for many uses of the invention to employ but one chain and one pair of sprocket-wheels. In such construction the shaft of the forward sprocket-wheel, or that which the lug *e'* must pass, is secured on the side opposite the lugs, and does not pass through far enough to interfere with the longer lug.

The arrangement of the parts may be as shown in Fig. 3. The sprocket-wheels C, endless chain D, and lugs *e* and *e'* are the same as heretofore described; but instead of the bar *b* for engaging the lugs there is substituted the rod or pin *n*, or other suitable projection, secured to the chain D, and extending outward on the side on which the lugs are to travel far enough to engage them.

The parts to be reciprocated may be arranged to travel partly beyond either or both sprocket-wheels; or by placing them directly over the lugs they may be made to travel only over the distance between the sprocket-wheels.

Having fully described our invention, what we desire to claim and secure by Letters Patent is—

1. The combination, with the devices for cleaning the bolting-cloth of a middlings-purifier shaker, of the mechanism described for reciprocating them, consisting of the sprocket-wheels C C, endless chains D D, lugs *e* and *e'*, and rod *b*, substantially as and for the purpose set forth.

2. The combination of sprocket-wheels C C, shafts *c c'*, endless chains D D, lugs *e* and *e'*, and rod *b*, when arranged for converting rotary into reciprocating motion.

3. The mechanism, constructed substantially as set forth, for converting rotary into reciprocating motion, consisting of sprocket-wheels, the lugs *e* and *e'*, and an endless chain or chains over the sprocket-wheels, and bearing a rod or projection for engaging said lugs.

ALVA H. KIRK.
WILLIAM J. FENDER.

Witnesses:
HOWE PAIGE,
J. F. COLLOM.