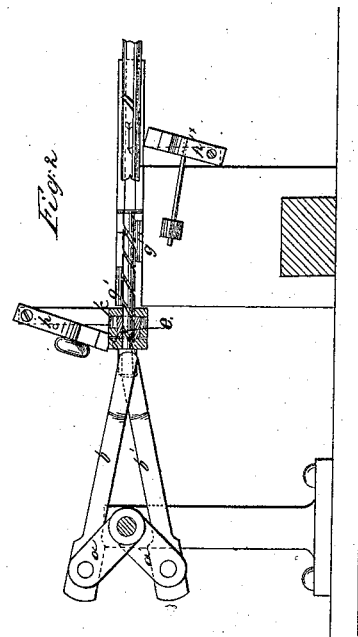
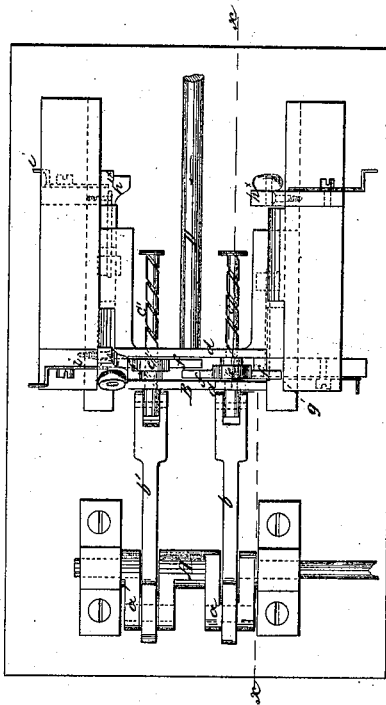
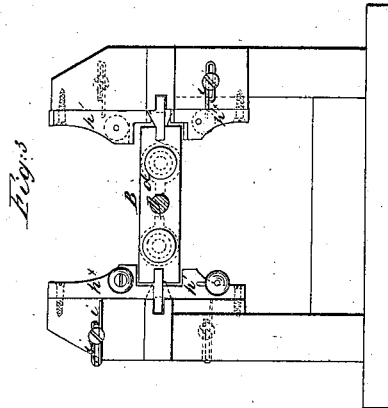
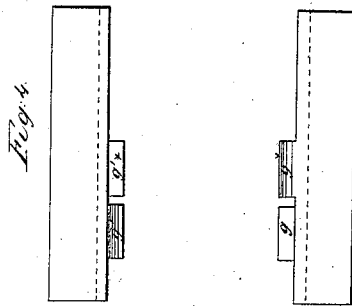


F. Yeiser,

Converting Motion.

N^o 52,354.

Patented Jan. 30, 1866.



Witnesses
Wm. Edson
Thos. Busch

Inventor
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per munt. of
Attorneys

UNITED STATES PATENT OFFICE.

F. YEISER, OF DANVILLE, KENTUCKY.

IMPROVEMENT IN TRANSMITTING MOTION.

Specification forming part of Letters Patent No. 52,354, dated January 30, 1866.

To all whom it may concern:

Be it known that I, F. YEISER, of Danville, in the county of Boyle and State of Kentucky, have invented a new and useful Improvement in Transmitting Motion; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention. Fig. 2 is a longitudinal vertical section of the same, taken in the plane indicated by the line *xx*, Fig. 1. Fig. 3 is an end elevation of the same. Fig. 4 is a detached plan or top view of the guides.

Similar letters of reference indicate like parts.

The invention relates to a mechanism intended to transmit the power and motion from a piston-rod of a steam-cylinder or from another reciprocating device to a crank-shaft with the least possible loss of power. This purpose is effected by providing the crank-shaft with two cranks standing at an angle of ninety degrees, each crank being connected with a worm or spiral rod, which works in the cross-head, in combination with suitable tappets and guides, in such a manner that the cross-head commences to act on each crank when the same stands under an angle of forty-five degrees toward the connection-rod, and continues so to act until said crank has passed through an arc of ninety degrees, when the other crank is brought in operation, and so forth. Suitable hinged adjustable stops are combined with the guides of the tappets, and serve to prevent said tappets from passing to the wrong side of the guides. When the motion of the engine is to be reversed, the position of the hinged stops has to be changed.

A represents a crank-shaft, provided with two cranks, *a a'*, which are situated at right angles to each other. Said cranks connect, by rods *b b'*, with two worms, *cc'*, which are guided in the cross-head B. This cross-head moves in suitable guides C, and it is provided with two plates, *d*, through which the worms *c c'* pass freely, and which are situated at such a distance apart as to admit two nuts, *e e'*, which are tapped to fit the worms *cc'*. As the cross-

head is carried back and forth by the action of the piston-rod D the nuts *ee'* are compelled to revolve on the worms *c c'*.

From each of the nuts extend two arms or tappets, *f* and *f'*, and the guides C are provided with lips *g g* g' g'** above and below, as shown in Fig. 4 of the drawings, and so situated that the tappets *ff'* alternately come in contact with them, and thereby the revolving motion of the nuts is interrupted. At the outer end of each of these lips is a hinged stop, *h h* h' h'**, and these serve to prevent the tappets turning any farther than desirable. These stops can be locked back by bolts *i* or any other suitable means.

The operation is as follows: Suppose the piston-rod is pushed out in the direction of the arrows marked thereon in Figs. 1 and 2, which will place the cranks at angles of forty-five degrees, and the stops *h' h'** are locked back, as shown in Fig. 2, then one of the tappets *f* of the worm *c* will rest on the stop *g*. If the piston-rod is then down in the direction opposite the arrows marked thereon in Figs. 1 and 2, the tappet *f* will slide along on the lip *g*, and thus prevent the nut *c* from revolving, whereas the nut *e'* is free to revolve on the worm *c'*. At that moment the strain exerted on the piston-rod is transmitted to the crank *a*, and continues to do so until the tappet *f* has passed the lip *g*. When this takes place the crank *a'* is at an angle of forty-five degrees, and the tappet *f'* catches on the lip *g**, thus arresting the revolving motion of the nut *e'*, while the nut *c* is permitted to rotate freely. During this time the strain of the piston-rod acts on the crank *a'*, and the crank *a* is relieved, and this continues to the end of the stroke. On the return stroke the tappet *f* catches first under the stop *h**, which retains the same until it catches under the lip *g**, and thereby the nut *c* is arrested and the strain of the piston-rod transferred to the crank *a*. After the crank-shaft has completed a quarter-revolution the tappet *f* is released, and the tappet *f'*, by catching under the lip *g'*, arrests the nut *e'*, thus transferring the strain to the crank *a'*. It will be seen that by this arrangement the strain of the piston-rods is transmitted to the crank-shaft always under the most favorable circumstances, the power being applied to each crank when it is at an angle of forty-five de-

grees, and acting thereon until the same has completed a quarter-revolution. At the end of that time the power is transferred to the other crank, and so on at the end of each quarter-revolution.

What I claim as new, and desire to secure by Letters Patent, is—

1. The worms *c c'*, nuts *e e'*, and tappets *f f'*, or their equivalents, in combination with the guides *C*, lips *g g' g* g'**, and cranks *a a'* in the crank-shaft *A*, constructed and operating substantially as and for the purpose set forth.

2. The adjustable stops *h h* h' h'**, in combination with the tappets *f f'*, nuts *e e'*, worms *c c'*, and cranks *a a'*, constructed and operating substantially as and for the purpose described.

F. YEISER.

Witnesses:

GEORGE YEISER,
CLIFTON RODES.