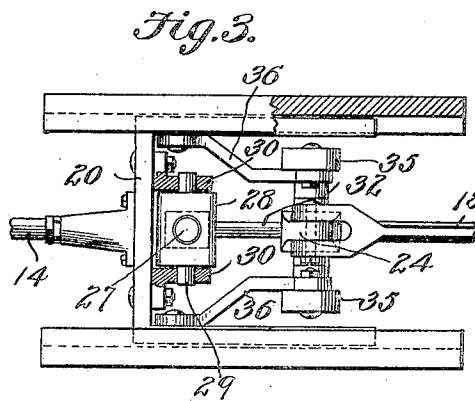
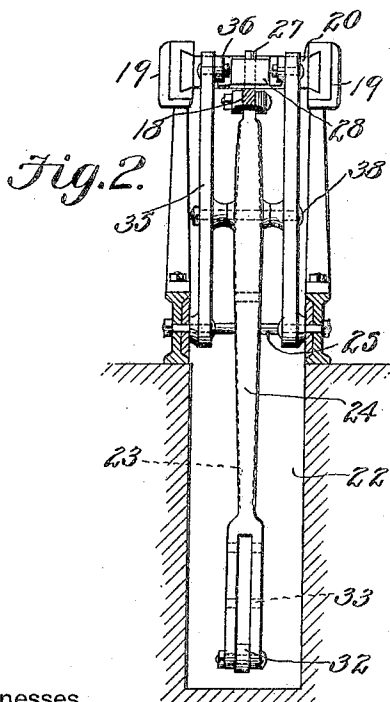
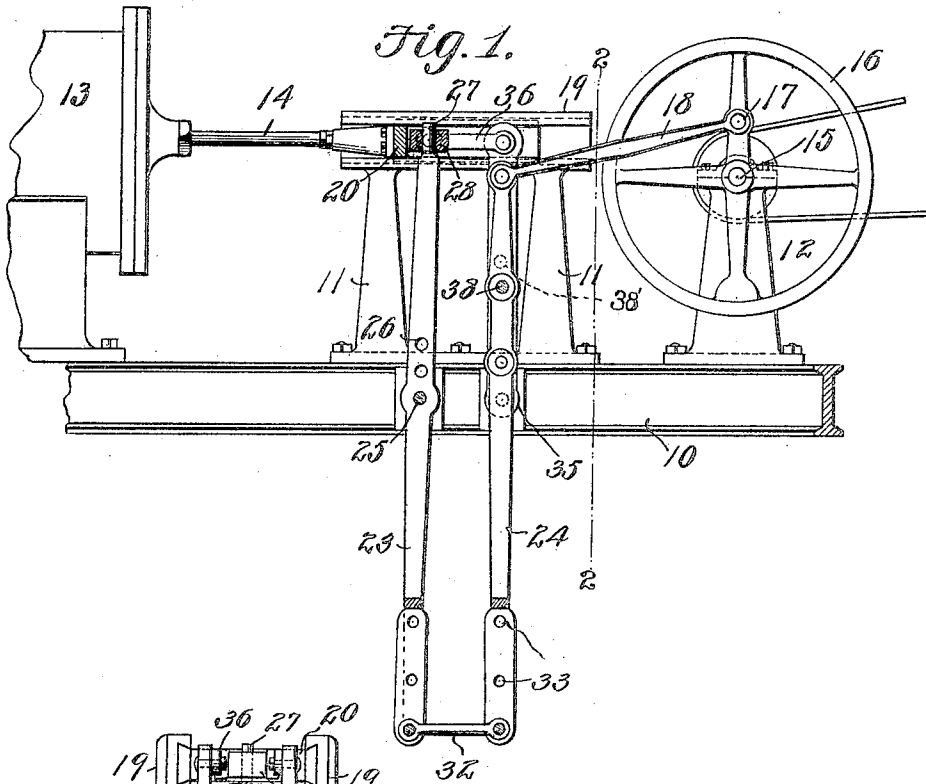


No. 821,003.

PATENTED MAY 22, 1906.

J. TRAINER.
POWER TRANSMITTING APPARATUS.

APPLICATION FILED OCT. 2, 1905.



Witnesses

E. J. Stewart
John E. Parker

James Trainer,
Inventor.

by *Cashmore*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES TRAINER, OF POINTROCK, OHIO.

POWER-TRANSMITTING APPARATUS.

No. 821,003.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed October 2, 1905. Serial No. 281,069.

To all whom it may concern:

Be it known that I, JAMES TRAINER, a citizen of the United States, residing at Pointrock, in the county of Meigs and State of Ohio, have invented a new and useful Power-Transmitting Apparatus, of which the following is a specification.

This invention relates to apparatus for transmitting power, and has for its principal object to provide a novel leverage system between a driving and a driven element.

A further object of the invention is to utilize a mechanism of this character in converting reciprocatory into rotary motion.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a power-transmitting apparatus constructed in accordance with the invention. Fig. 2 is a transverse sectional view of the same on the line 2 2 of Fig. 1. Fig. 3 is a plan view of the upper portion of the device, parts being broken away in order to more clearly illustrate the construction.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The apparatus is supported on a suitable bed or base 10, carrying vertical standards 11, a pillow-box stand 12, and a cylinder 13. The cylinder 13 contains a suitable piston, to which a piston-rod 14 is connected, and the movement imparted to the piston-rod is transmitted through the mechanism forming the subject of the present invention to a shaft 15, that is mounted in the pillow-box stand 12. The shaft is shown as provided with a balance-wheel 16, carrying a crank-pin 17 for the reception of the end of a connecting-rod 18.

The vertical standards 11 are provided at their upper ends with guides 19 for the reception of a cross-head 20, that is secured to the piston-rod 14 and is reciprocated by steam or other power, the stroke of the cross-head being a trifle greater than the stroke of the crank-pin.

The base 10 is preferably formed of sill members spaced from each other, and between them is a pit 22 to receive the lower

ends of levers 23 and 24, this arrangement being desirable where the apparatus is mounted on the ground-floor, or the arrangement of the parts may be altered and the levers arranged horizontally, if desired.

The lever 23 is pivoted on a pin 25, carried by the bed-plate sill 10, the pin extending through the lever 23 at a point somewhat above the longitudinal center of said lever, and additional openings 26 may be formed in said lever to permit adjustment. The upper end of the lever is reduced and turned to form a pin 27, that fits within a rocking block 28, having trunnions 29 extending into suitable openings formed in brackets 30, that are carried by the cross-head. The lower ends of both levers 23 and 24 are bifurcated for the reception of the opposite ends of a connecting-link 32, and the pivot-pins of the link may be adjusted into any one of a number of openings 33, formed in said levers.

To the base or bed plate sills are pivoted the lower ends of a pair of levers 35, the upper ends of which extend between the cross-head guides and are connected to the cross-head by independent links 36, so that movement of the cross-head will be transmitted to said levers. The pivotal connection between the levers and the bed-plate sills may also be adjusted, if desired.

The two levers 35 are connected at a point about midway of their lengths by a pivot-pin 38, which may be adjusted into openings 38', formed in said levers, and said pivot-pin also extends through the upper portion of the lever 24, said lever 24 being thus divided into an upper arm and a lower arm, of which the upper arm is approximately one-fourth the length of the lower arm.

The shorter upper arm of the lever 24 is connected by the rod 18 to the crank-pin 17 and transmits movement to the latter.

The upper arm of the lever 23 is approximately the same length as the levers 35, and as the pivotal points of these three members is approximately in the same horizontal plane and as the upper ends of both are connected to the cross-head they continue in parallel relation throughout all portions of the stroke of the cross-head. The lower arm of the lever 23 being somewhat longer than the upper arm, the effective force at the lower end of lever 23 is somewhat less than the force transmitted by the cross-head to the upper end of the lever. This force, however, is transmitted to the lower and longer arm of the lever

24, and acting through the shorter upper arm of said lever 23 the force is increased in proportion to the difference in the lengths of the upper and lower arms of said lever 24, this
5 being approximately four to one.

Having thus described the invention, what is claimed is—

1. In apparatus of the class described, the combination with a driving and a driven
10 member, of a pair of parallel levers having independent fulcrums and both operatively connected to the driving member at one end, a floating lever pivotally connected to one of said levers near one end and having a linked
15 connection with the other lever at the opposite end, and means for connecting the floating lever to the driven member.

2. In apparatus of the class described, a reciprocatory cross-head, a two-armed lever,
20 and a one-arm lever connected to said cross-head, a floating lever pivoted at a point intermediate its ends to said one-arm lever, means for connecting the longer arm of the floating lever to the second arm of the two-arm lever,
25 and a driven member to which the shorter arm of said floating lever is connected.

3. In apparatus of the class described, the

combination with a cross-head, of a guiding means therefor, a cross-head-operating device, brackets carried by the cross-head, a
30 block pivoted to said brackets, a lever pivoted at a point intermediate its ends on a stationary pin, the upper arm of said lever having a reduced portion fitting in said rocking block, a pair of one-arm levers pivoted ap-
35 proximately in a horizontal plane of the first lever, links for connecting the upper ends of said one-arm levers to the cross-head, a floating lever pivoted between the two one-arm levers, the pivot of said floating lever being
40 arranged at a point adjacent to its upper end, a link connecting the lower arm of the first lever to the lower longer arm of the floating lever, a crank-shaft, a crank-pin, and a connecting-rod extending between the upper
45 shorter arm of the floating lever and the crank-pin.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES TRAINER.

Witnesses:

J. ANSON JONES,
MARGARET MORGAN.