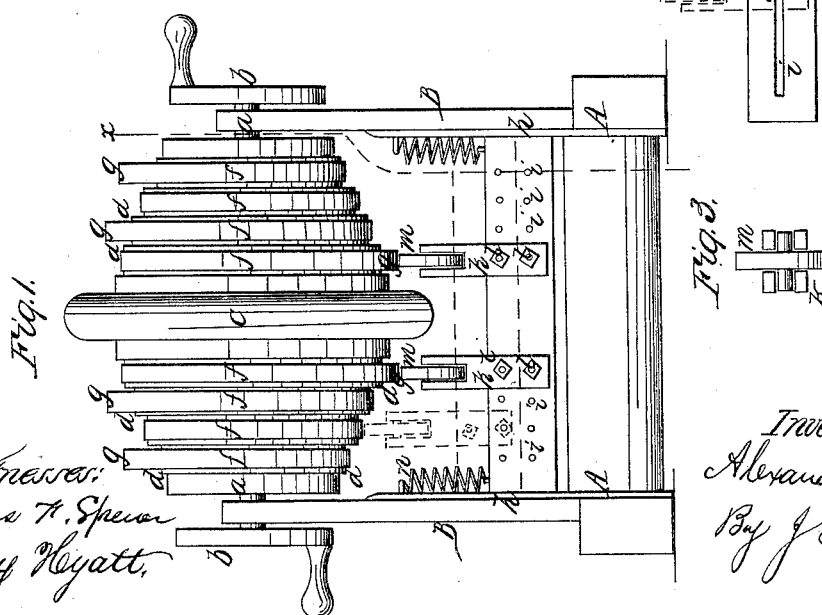
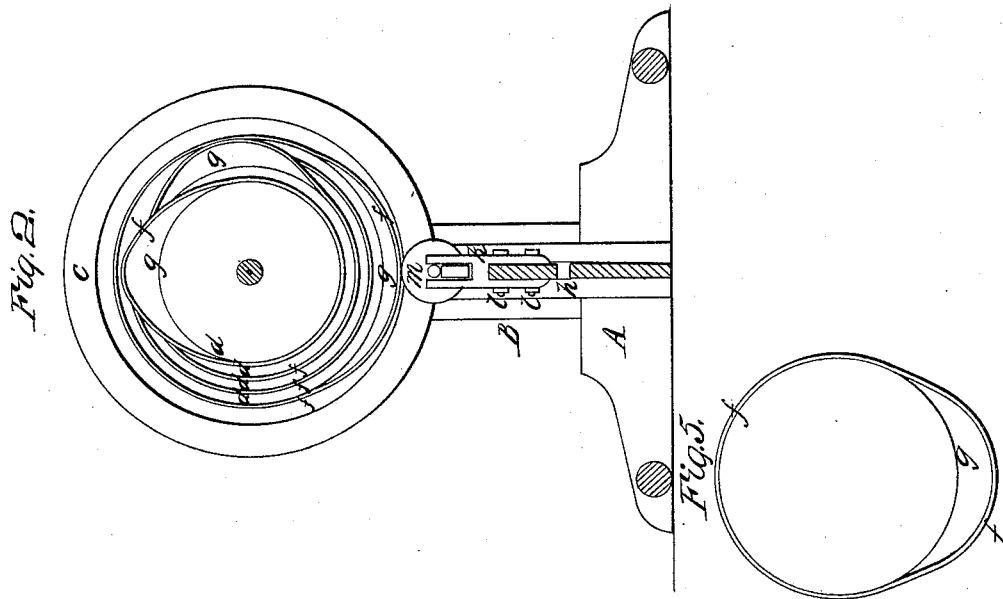


A. Dean,

Converting Motion.

N^o 45,230.

Patented Nov. 29, 1864.



Witnesses:
Chas. T. Spencer
Jay Hoyatt,

Inventors:
Alexander Dean
By J. Fraser & Co
Attys

UNITED STATES PATENT OFFICE.

ALEXANDER DEAN, OF PENN YAN, NEW YORK.

IMPROVEMENT IN CHANGING ROTARY INTO RECIPROCATING MOTION.

Specification forming part of Letters Patent No. 45,230, dated November 29, 1864; antedated November 25, 1864.

To all whom it may concern:

Be it known that I, ALEXANDER DEAN, of Penn Yan, in the county of Yates and State of New York, have invented a new and useful Improvement in Machines for Changing Rotary into Reciprocating Motion; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a front elevation of my improved machine; Fig. 2, a vertical transverse section of the same in the plane of line *x x*, Fig. 1, showing the drum and operating parts in elevation; Fig. 3, a top view of one of the friction-rollers and the end of the standard in which it rests; Fig. 4, a side view of a portion of the reciprocating gate or slide, showing a modification of the means of adjusting the standards that support the friction-wheels; Fig. 5, a view of one of the cam-rings detached.

Like letters of reference indicate corresponding parts in all the figures.

It is the object of my improvement to convert a rotary into a reciprocating motion, and to vary or adjust the length of the stroke of the gate or slide that receives the latter in order to adapt it to the various purposes to which it is to be applied.

My invention consists in a drum, or equivalent, forming the double frustum of a cone having circular rims or heads of different diameters, on which fit cam-rings of varying eccentricity or throw, operating on a reciprocating gate by means of friction-wheels, whose standards or bearings are adjustable laterally to correspond with the various positions of the cams.

As represented in the drawings, a suitable frame, A, is provided, having two upright supports or bearings, B B, on opposite sides, in which is mounted a drum, C. This drum is preferably made of iron, cast hollow, and having two heads, fitting, respectively, in the opposite extremities, provided with journals *a a* and cranks *b b* on one or both ends. In form this drum constitutes the double frustum of a cone, whose diameter is greatest in the middle. Midway it is formed with a rim, *c*, that serves as a balance-wheel, and from this point the periphery of the drum on either side is formed

into a succession of plane rims or heads, *d d d*, of regularly-decreasing diameter, similar to a fusee-wheel, the corresponding rims on the opposite sides being of the same diameter and being situated at the same distance from the center. On these rims fit, respectively, rings *f f*, Fig. 5, covering cams *g g*, and secured in place on the rims in such a manner as to be removable at pleasure.

The cams *g g* gradually increase in size or eccentricity from the inner one to the outer one, or in the direction opposite to the increase of the diameter of the rims *d d*. Thus it will be seen that the inner cam has the minimum and the outer the maximum amount of throw. The cams of similar rings on opposite sides stand in the same relative position, so as to produce the same amount of stroke at the same time.

Beneath the drum is situated a reciprocating gate D, or equivalent, running in grooves or guides *h h* of the bearings B B. In this gate are made a suitable number of adjusting-holes, *i i*, corresponding with the cams above, or an equivalent slot, as is shown in Fig. 4, by means of which standards *k k* are secured in any desired position by bolts *l l*. These standards support friction-wheels *m m* in their tops, which friction-wheels receive the action of the cams *g g*, and thus produce a reciprocating motion of the gate. The reaction of the gate is produced by springs *n n*, or equivalent.

The operation of this machine is manifest. The eccentricity of the cams forces the gate downward and the springs *n n* draw it back, thus producing the up-and-down motion. This reciprocating motion is particularly applicable to many different purposes where a very great power is not necessary, especially in farm use—such, for instance, as cutting straw, churning, sawing wood, &c. It is obvious that in applying the machine to these various uses it is necessary to vary the length of the stroke of the gate D—for example, in cutting straw the stroke would be short, but in churning it would be long. It will be seen that this effect is accomplished by merely moving the standards or bearings *k k* in or out laterally beneath the corresponding cams, as indicated by the black and red outlines of the same in Fig. 1, the inner cams producing the shorter and

the outer cams the longer strokes. This adaptation of my machine to various lengths of stroke is of great importance.

By this arrangement of the conical drum and the cam-rings fitting thereon, if at any time the cams get out of order, or if it is desirable to change their position, they are easily removed and replaced. This is an advantage over a drum with the cams forming a part of the same or fixed rigidly in place.

I do not claim, broadly, an eccentric acting on a reciprocating slide, as I am aware that such is common in mechanism; but

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

The drum C, provided with the rims *d d d*

and the cam-rings *f f*, having cams *g g*, of varying eccentricity, fitting thereon, in combination with the reciprocating gate D, provided with standards or bearings *k k*, adjusting laterally to correspond with the position of the cams in such a manner that a long or short stroke of said gate may be produced, substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALEXANDER DEAN.

Witnesses:

R. F. OSGOOD,

J. S. TRIPHAGER.