

Transmitting Motive Power.

Patented May 3, 1870.

This technical drawing illustrates a mechanical assembly, likely a part of a machine. The assembly consists of several interconnected components, each labeled with a letter or number. A central vertical shaft is visible, passing through various parts. Key components include:

- Component A:** A horizontal bar or plate at the top, featuring a circular hole on its left end.
- Component B:** A horizontal bar or plate below A, also with a circular hole on its left end.
- Component C:** A horizontal bar or plate below B, featuring a circular hole on its left end.
- Component D:** A horizontal bar or plate below C, featuring a circular hole on its left end.
- Component E:** A horizontal bar or plate below D, featuring a circular hole on its left end.
- Component F:** A horizontal bar or plate below E, featuring a circular hole on its left end.
- Component G:** A horizontal bar or plate below F, featuring a circular hole on its left end.
- Component H:** A horizontal bar or plate below G, featuring a circular hole on its left end.
- Component I:** A horizontal bar or plate below H, featuring a circular hole on its left end.
- Component J:** A horizontal bar or plate below I, featuring a circular hole on its left end.
- Component K:** A horizontal bar or plate below J, featuring a circular hole on its left end.
- Component L:** A horizontal bar or plate below K, featuring a circular hole on its left end.
- Component M:** A horizontal bar or plate below L, featuring a circular hole on its left end.
- Component N:** A horizontal bar or plate below M, featuring a circular hole on its left end.
- Component O:** A horizontal bar or plate below N, featuring a circular hole on its left end.
- Component P:** A horizontal bar or plate below O, featuring a circular hole on its left end.
- Component Q:** A horizontal bar or plate below P, featuring a circular hole on its left end.
- Component R:** A horizontal bar or plate below Q, featuring a circular hole on its left end.
- Component S:** A horizontal bar or plate below R, featuring a circular hole on its left end.
- Component T:** A horizontal bar or plate below S, featuring a circular hole on its left end.
- Component U:** A horizontal bar or plate below T, featuring a circular hole on its left end.
- Component V:** A horizontal bar or plate below U, featuring a circular hole on its left end.
- Component W:** A horizontal bar or plate below V, featuring a circular hole on its left end.
- Component X:** A horizontal bar or plate below W, featuring a circular hole on its left end.
- Component Y:** A horizontal bar or plate below X, featuring a circular hole on its left end.
- Component Z:** A horizontal bar or plate below Y, featuring a circular hole on its left end.

The drawing uses various hatching and shading techniques to represent different materials and the three-dimensional form of the components. The labels are placed near the corresponding parts for identification.

Witnesses:
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Letters Patent No. 102,697, dated May 3, 1870.

IMPROVEMENT IN TRANSMITTING POWER.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, ALBANUS W. MORTON, of Morrisania, in the county of Westchester and State of New York, have invented a new and useful Improvement in Transmitting Motive Power, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a partly-sectional plan of certain mechanism embracing my improvement; and

Figure 2, a sectional elevation of the same, taken as indicated by the irregular line *x x*, in fig. 1.

Similar letters of reference indicate corresponding parts.

This invention has for its object the production of a rotary motion in one and the same direction from a primary shaft as a driver, irrespective of the direction in which the latter may be turned, and whether it be rotated or simply oscillated. To this end,

The invention embraces a certain combination of a rag-wheel or spiral-faced clutch, fast on the driving-shaft, with a pair of friction-disks or two pairs of friction-disks when the driving-clutch is made spiral on both of its faces, the one of which disks in each pair gears with the driving-clutch, and is hung loose, while the other disk of the pair is in fast connection with an operating-wheel in gear with the shaft to which it is required to communicate rotary motion in a given direction.

Said invention is applicable to various purposes, such as, for instance, among others, the operating of rotary hand-blowers for blacksmiths' fires, and whereby a single blower may serve for two fires without restriction as to the working of the same by the smith or his helper, on opposite sides of a double hearth, from positions, as regards the operators, which are reverse to each other, by reason of its being immaterial in which direction the driving-shaft is turned, or whether the same be rotated or merely oscillated.

Also, the invention may be applied with advantage to operating sewing-machines by means of a treadle connected by strap with the driving-clutch shaft, to vibrate it in one direction, while a spring connected by a second strap wound in the reverse direction on said shaft serves to return the treadle to its normal position, for a repetition of the driving action of the clutch and pair of disks it works in combination with.

A fly-wheel is advisable in every instance, to keep up a smooth and easy continuous motion in the one direction of the driven shaft, but is especially essential when the driving-clutch, made to vibrate, is of a single construction or spiral shape on only one of its faces, for operation in concert with a single pair of disks, in order that the motion of the driven shaft

may be maintained by the momentum of the fly in the back or non-driving motion of the clutch. The invention will here be described, however, under a double spiral-faced construction of the clutch.

Referring to the accompanying drawing—

A represents the driving-shaft, hung to rotate or vibrate in suitable bearings, and which may be driven by hand-crank or other suitable means.

B is a clutch, fast to the driving-shaft A, and of rag-wheel form, or made spiral on both of its opposite sides or faces *a a'*.

C C' are friction-disks, arranged loose on the driving-shaft, so as to be free to turn independently of it, and capable of a limited longitudinal motion thereon. These friction-disks carry, on their inner sides, spiral-faced half clutches *b b'*, made to freely or loosely gear with the driving-clutch B.

Arranged in close proximity, as regards their outside faces, to these disks C C', and also hung loose on the driving-shaft A, but only so that they can turn independently of it, and are incapable of longitudinal movement thereon, are corresponding disks D D'. These disks are in fast connection with loose spur-wheels E E', supported by collars *c c'*, fast to the driving-shaft, for the purpose of restraining them and the disks D D' from longitudinal movement on said shaft.

The spur-wheel E is in gear with an intermediate pinion, F, that meshes into a pinion, G, on the shaft H, to which it is required to give rotary motion in the direction indicated by the arrow *y*, and which may carry a fly-wheel, I.

The other spur-wheel, E', is in direct gear, by a pinion, J, with said shaft H.

As the parts are thus constructed and arranged, it is immaterial in which direction the driving-shaft A be turned, or whether it be wholly rotated or only oscillated, the shaft will have a continuous rotary motion kept up to it in one and the same direction, inasmuch as, when turning the shaft A in the one direction, the spiral face *a* of the clutch B presses on the half clutch *b*, to force up the friction-disk C against the disk D, and rotates said disks in the same direction as the driving-shaft, in like manner as if said disks were fast to it, and, through the wheel E and pinions F G, revolves the shaft H in a given direction.

When turning the driving-shaft A in a reverse direction, the clutch B is relieved from pressing outward on the half clutch *b* and disk C, and the spiral face *a'* of the clutch made to bear against the half clutch *b'*, and press outward the disk C' into frictional contact with the disk D', which makes the disks C' D' the drivers, instead of C and D, as before, and, by

the spur-wheel E' and pinion J, continues the rotary motion of the shaft H in the same direction as when C and D were the drivers.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of a spiral-faced driving-clutch with a pair of loose and independent friction-disks, the one of which is made capable of longitudinal motion relatively to its axis, and is in free gear with the driving-clutch, substantially as specified.

2. The combination of the driving-clutch B, made spiral-faced on its opposite sides or faces, the two pairs of friction-disks C D and C' D', and half clutches b b', for operation, in connection with suitable gearing, for keeping up motion to a secondary shaft, essentially as herein set forth.

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Witnesses:

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