

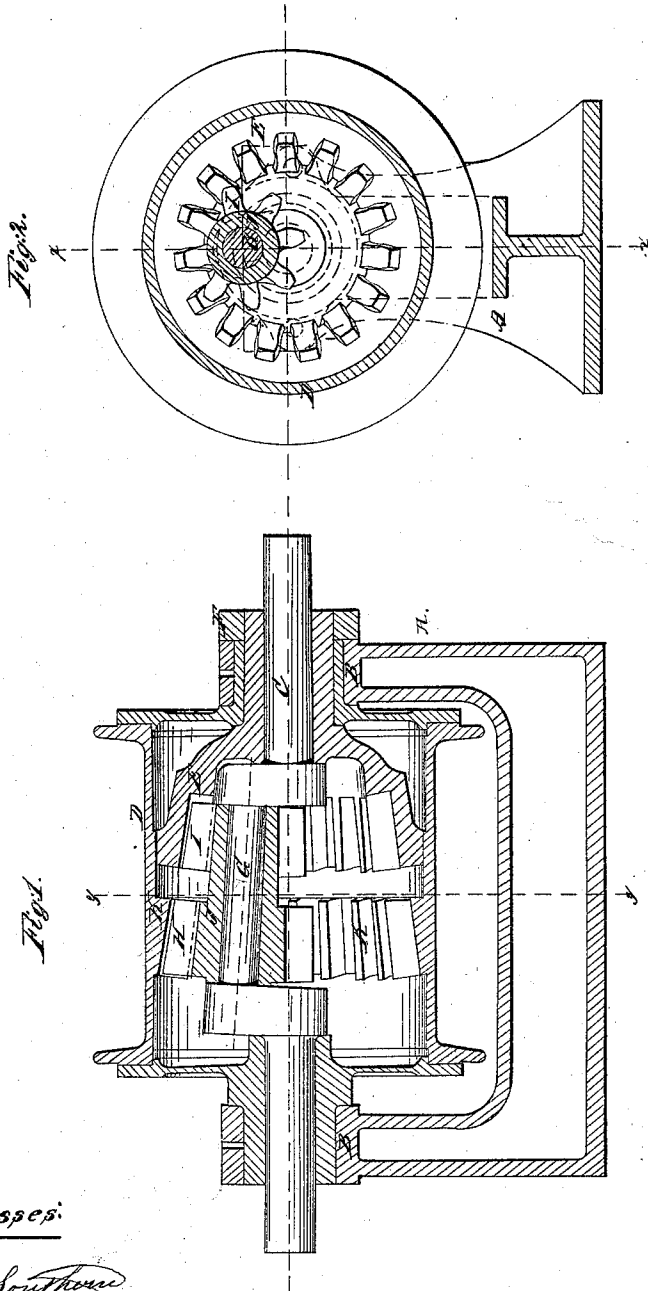
J. F. Rochow,

4, Sheet, Sheet 1.

Gearing.

N^o 70,122.

Patented Oct. 22, 1867.



Witnesses:

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Inventor:

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Per Shattwood & Sleep
Attys.

J. F. Rochow,

Gearing.

N^o 70,122.

Patented Oct. 22, 1867.

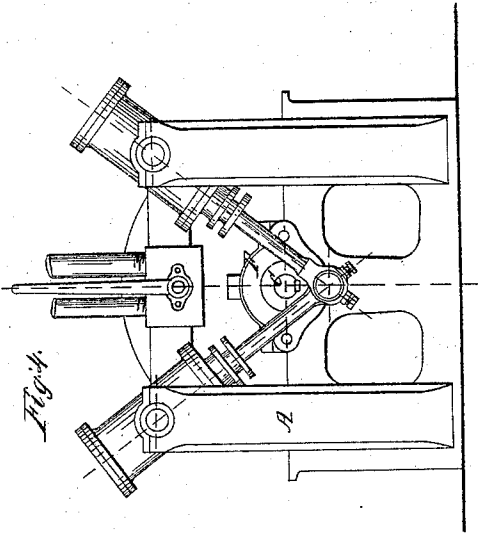


Fig. 6.

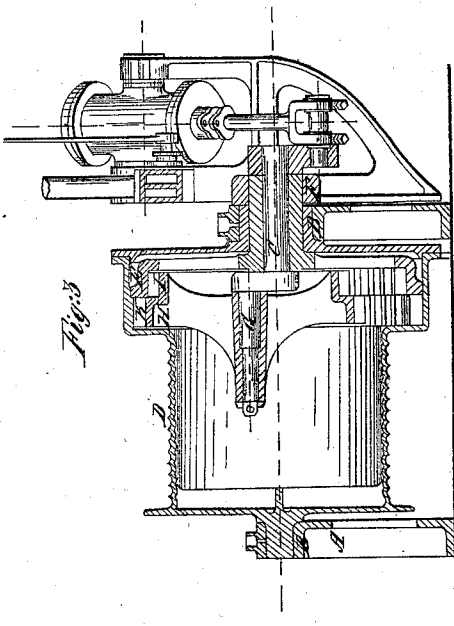
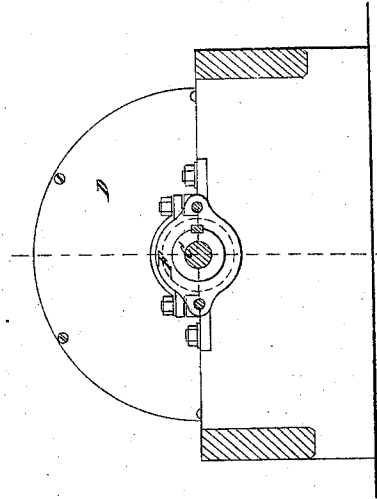
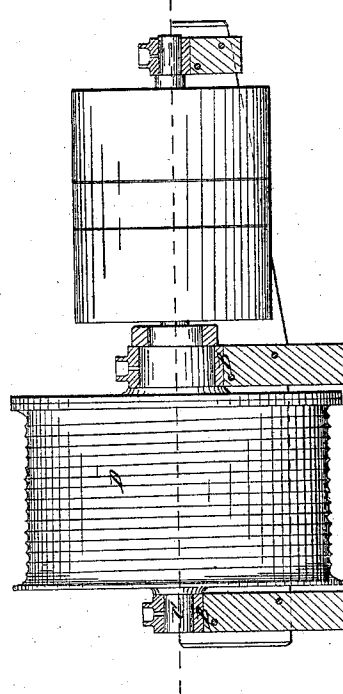


Fig. 5.



Witnesses.

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4 Sheets, Sheet 3.

Gearing.

N^o 70,122.

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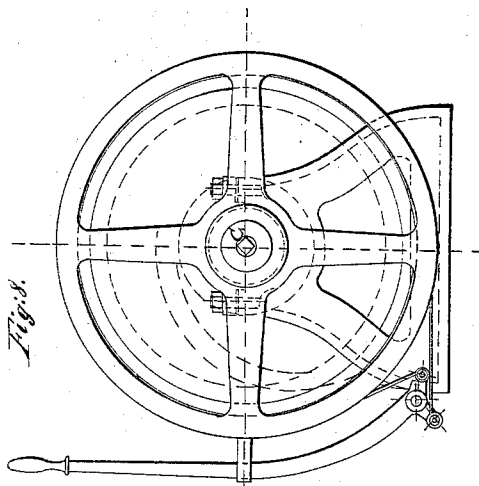


Fig. 8.

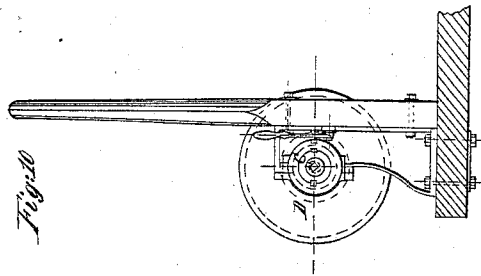


Fig. 10.

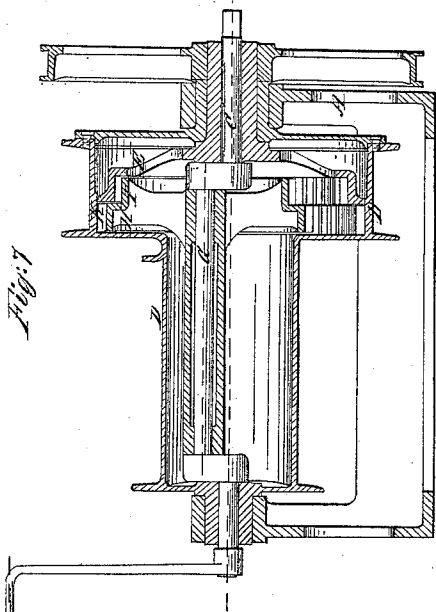


Fig. 1.

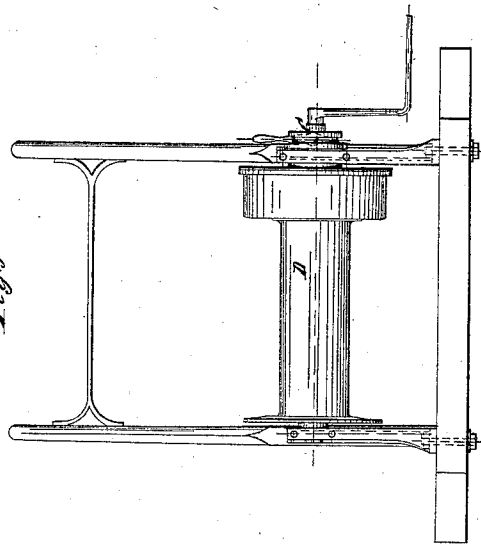


Fig. 9.

Witnesses.

*Geo. F. Sutherland
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Inventor.

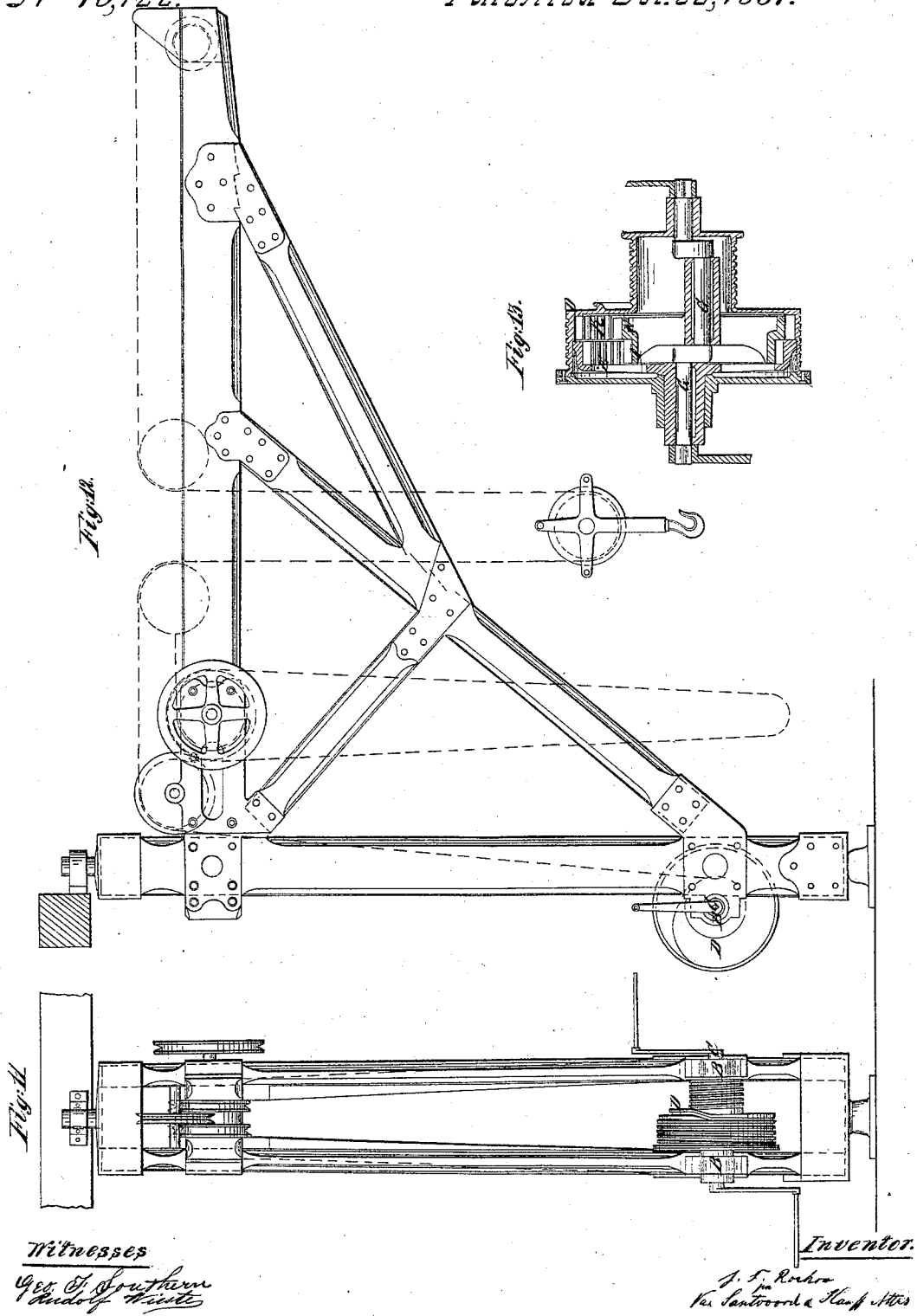
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per Sutherland & Waite
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Gearing.

N^o 70,122.

Patented Oct. 22, 1867.



United States Patent Office.

J. F. ROCHOW, OF NEW YORK, N. Y.

Letters Patent No. 70,122, dated October 22, 1867.

IMPROVEMENT IN HOISTING APPARATUS.

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, J. F. Rochow, of No. 213 East Broadway, in the city, county, and State of New York, have invented a new and improved Hoisting Apparatus and Power-Gear; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a longitudinal central section of this invention, the line xz , fig. 2, indicating the plane of section.

Figure 2 is a transverse vertical section of the same, the plane of section being indicated by the line yy , fig. 1.

The remaining figures are modifications of the same, showing its application to different machines, which will be referred to as the description progresses.

Similar letters of reference in these views indicate corresponding parts.

This invention consists in the arrangement of a crank-shaft, on the wrist-pin of which are mounted loosely two cog-wheels or pinions, which are secured to or cast solid with one and the same hub. One of these pinions meshes in an internal gear, which is either rigidly connected with the frame of the apparatus, or so arranged that it can be held stationary while the second pinion meshes in a gear in the interior of a rotary drum, and the proportion of these pinions and their respective gears is so adjusted that by imparting a revolving motion to the crank-shaft a slow and powerful motion is imparted to the drum, and a hoisting apparatus is obtained which is very compact, strong, durable, and applicable to a great many different purposes.

A represents a frame, of cast iron, or any other suitable material, and provided with boxes B, which form the bearings for the gudgeons of the drum D. One of these gudgeons is bored out to receive the shaft C, while the other gudgeon is bored out to fit upon the hub of the stationary gear E, which hub is bored out to admit the shaft C, as clearly shown in fig. 1 of the drawing. The stationary gear E is held in position by a gland, F, which is secured to the frame A by screws or in any other suitable manner, and in which the hub of said stationary gear is fastened by a key or any other suitable means. The shaft C is provided with a crank, G, and on the wrist-pin of this crank are mounted two pinions, H I, which are rigidly secured to or cast solid with one and the same hub, J, that turns loosely on the wrist-pin of the crank. The pinion I meshes into the cogs of the internal gear E, and the pinion H into an internal gear, K, on the inner surface of the drum D. On the outer circumference of this drum winds the hoisting-rope or chain. The proportion of the pinion I to the stationary gear E is different from the proportion of the pinion H to the internal gear K.

The operation is as follows: If the pinion I has eight cogs, the stationary gear fifteen, the pinion H ten, and the internal gear K eighteen, and if a revolving motion is imparted to the shaft C, each revolution of said shaft produces $\frac{1}{5}$ revolutions of the pinion I, and since this pinion is rigidly connected to the pinion H, this pinion also makes $\frac{1}{5}$ revolutions, or, in other words, it advances $\frac{1}{5} \times 10 = 18\frac{1}{2}$ cogs. If the proportion were such that the pinion H would advance only eighteen cogs, the drum D would remain stationary; but since said pinion advances eighteen and three-fourths cogs, the drum has to advance three-fourths of a cog for each revolution of the shaft C, or it has to make one twenty-fourth of a revolution, giving a purchase of twenty-four to one. If the pinion I has nine, and the pinion H eleven cogs, the number of revolutions of the pinion I for each revolution of the shaft C is equal to $\frac{1}{5}$, and the pinion H advance $\frac{1}{5} \times 11 = 18\frac{1}{2}$ cogs for each revolution of the shaft, and consequently the drum has to advance one-third of a cog or one fifty-fourth of a revolution for each revolution of the shaft, giving a purchase of fifty-four to one.

From these examples it will be readily understood that by a slight change in the proportion of the gears a hoisting apparatus can be made with any desired purchase. The apparatus is very simple in its construction, easily put up, and it is applicable to a great many different purposes.

In Figures 3 and 4 I have represented my hoisting apparatus in connection with a steam engine, and in this case the crank-shaft C may be made to extend only partially through the drum, with a bearing in one head only.

In Figures 5 and 6 a hoisting apparatus is represented, which is constructed like that shown in figs. 1 and 2, but arranged to be operated by a belt and pulleys.

In Figures 7 and 8 I have shown my invention in its application to a hand-hoisting machine, and in this case the stationary gear E is not rigidly attached to the frame A, but it is held by means of a brake-wheel and lever, and by releasing the brake-wheel the gear E is released, and the drum D is free to turn back.

In Figures 9 and 10 a similar apparatus is shown, which is intended particularly for a truck-hoister. In this case the stationary gear is released by a spring-lever or clutch, so that the drum can be allowed to turn back or arrested at any desired moment.

Figures 11 and 12 show the application of my invention to a crane, and in this case the drum D is provided with two or more different speeds which connect in such a manner that the hoisting-rope or chain can be readily changed from one to the other, according to the power required.

Figure 13 represents a longitudinal central section of the internal gear of my hoisting apparatus. While in figs. 1 and 2 bevel-gears are used, the gears used in fig. 13 are flat, and the drum is made with two speeds, as in figs. 11 and 12.

The same apparatus is also applicable as a power-gear for turn-tables, draw-bridges, turning-lathes, and other machines where great force is to be exerted with a comparatively small expenditure of power. In these cases the drum D will be replaced by a cog-wheel or pulley, with an internal gear to mesh into the pinion H, or the internal gear K may be secured to a shaft, which serves to transmit the motion.

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

The crank-shaft C, carrying pinions or cog-wheels H I, in combination with the gear E and internal gear K, all constructed and operating substantially as and for the purpose set forth.

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Witnesses:

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RUDOLPH WÜSTE.