3. Sheets. Sheet 1.

J. Richmond,

Motor.

No. 111,251. Patented Jan. 24. 1871.

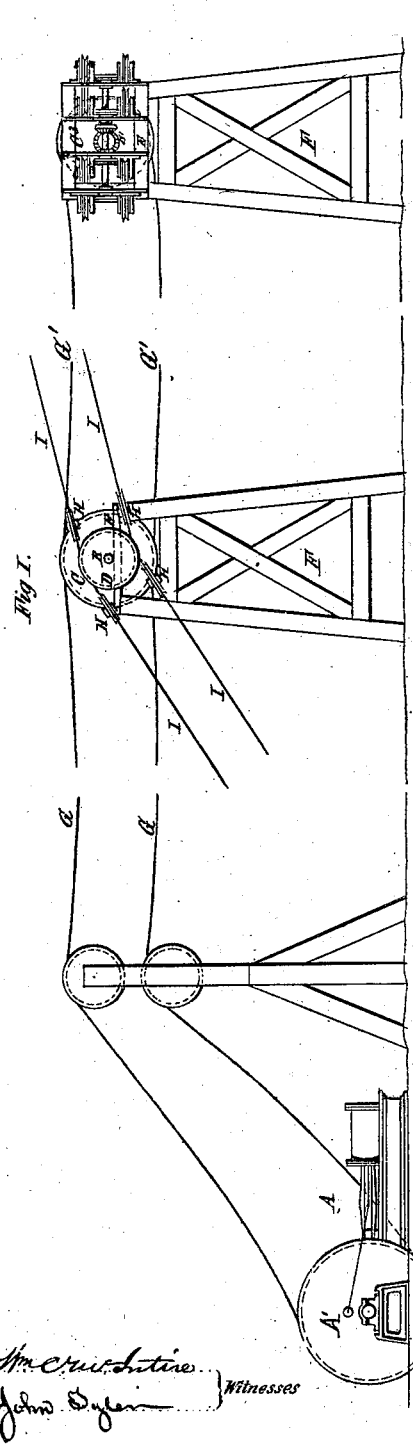


Fig. I.

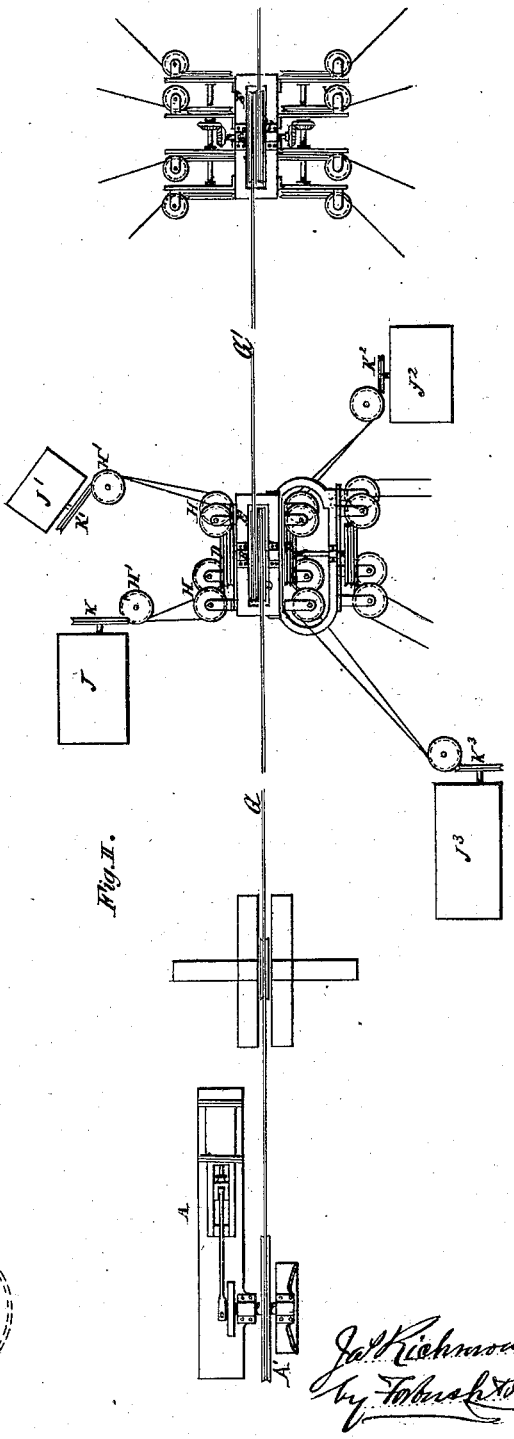


Fig. II.

Witnesses
Wm. Cruikshanks
John Dyer

Inventor
Ja. Richmond
by Fisher & Hyatt

3. Sheets: Sheet. 2.

J. Richmond,

Motor.

No. 111,251. Patented Jan. 24, 1871.

Fig. III.

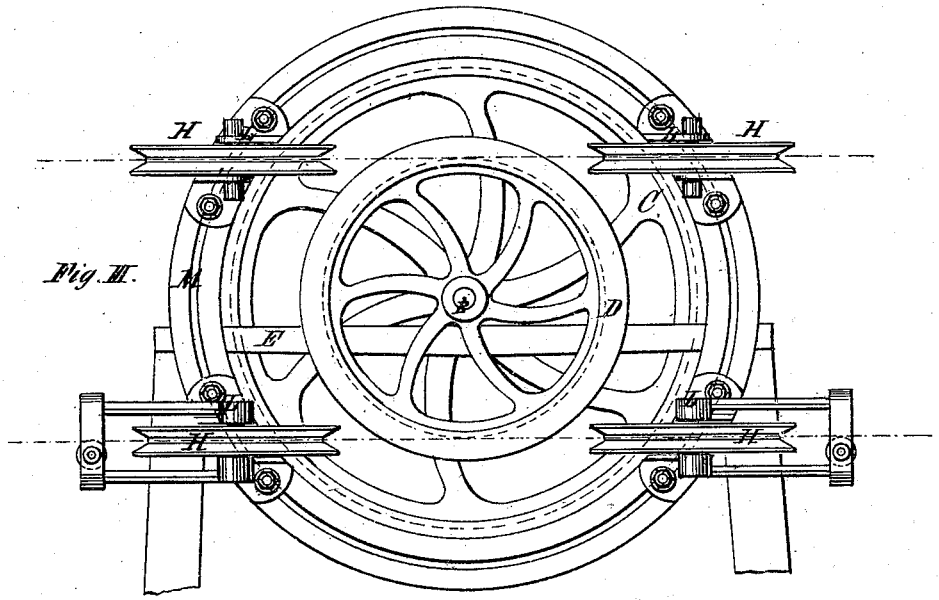
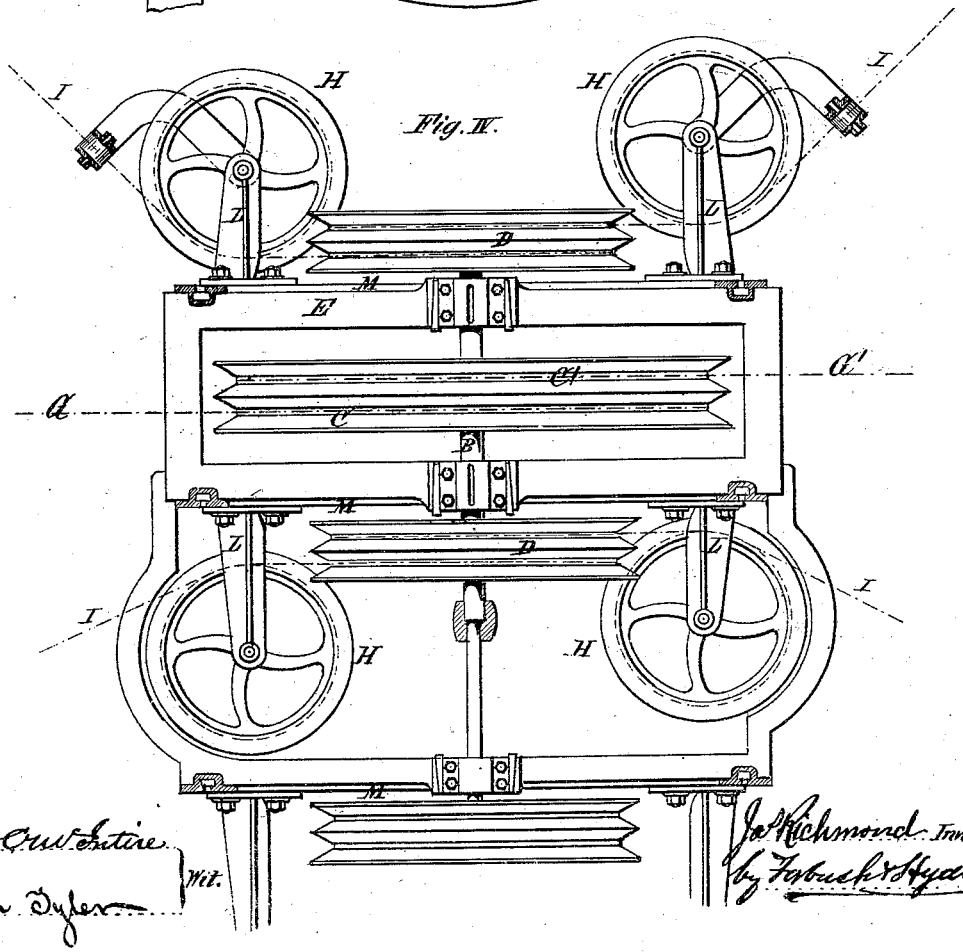


Fig. IV.



Wit.
Am. Cruchstone
John Dyer

Inventor
Jo. Richmond
by Fobush & Hyatt

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J. Richmond,

Motor.

No. 111,251. Patented Jan. 24, 1871.

Fig. V.

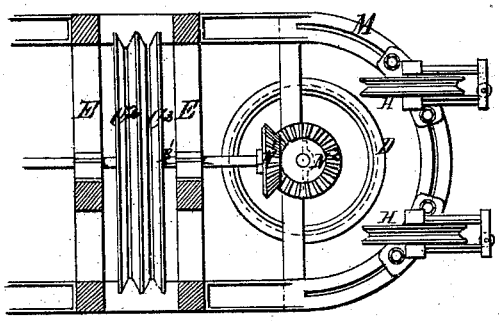


Fig. VI.

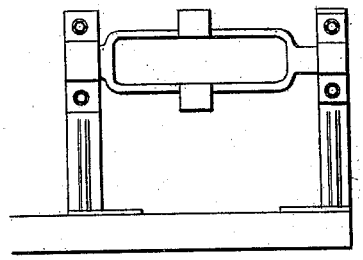


Fig. IV.

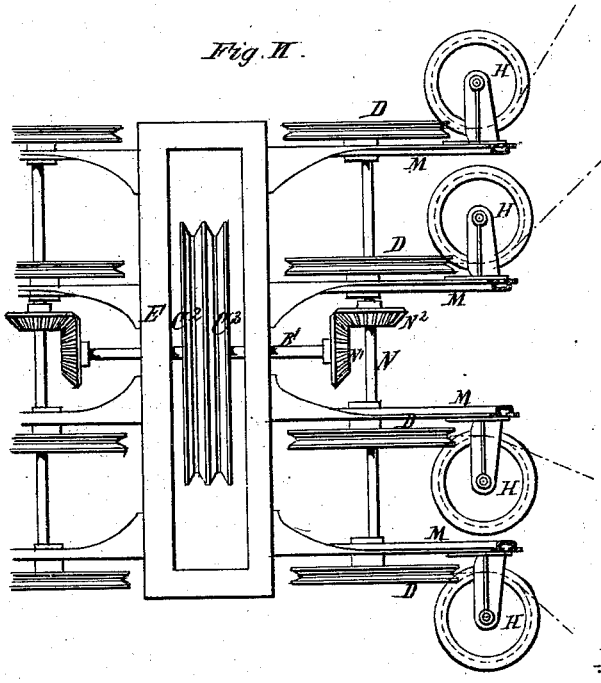
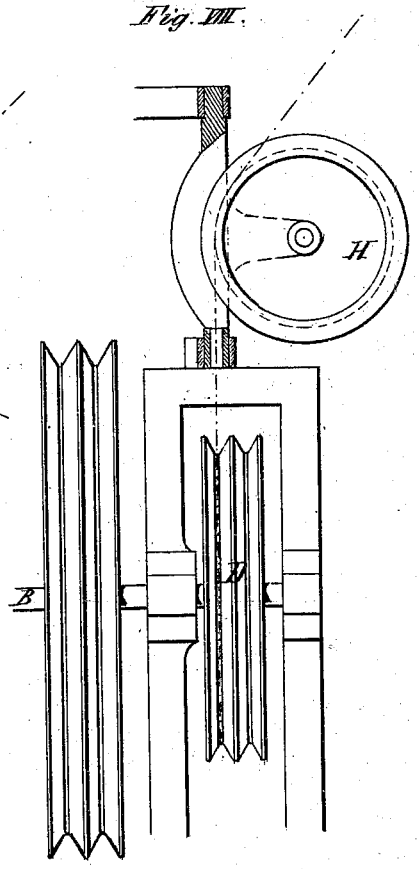


Fig. VII.



Jas. Richmond, Inventor
by Forbush & Hyatt

Witnesses.
Wm. Cruikshank
John Tyler

United States Patent Office.

JAMES RICHMOND, OF LOCKPORT, NEW YORK.

Letters Patent No. 111,251, dated January 24, 1871.

IMPROVEMENT IN MACHINERY FOR TRANSMITTING AND DISTRIBUTING MOTIVE POWER.

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

I, JAMES RICHMOND, of Lockport, in the county of Niagara and State of New York, have invented certain Improvements in Machinery for Transmitting and Distributing Motive Power, of which the following is a specification.

Nature and Objects of the Invention.

The first part of my invention consists in the combination, with a main driving-pulley, of the prime mover, and a succession of driving-pulleys and shafts located at convenient distances apart, and a corresponding succession of wire-rope driving-belts, transmitting the motion of the prime mover from one to the other of such driving-pulleys and shafts of branch belts leading from pulleys upon said driving shafts in such direction and to such points as it may be desired to distribute the power of the prime mover, the object being to furnish motive power to a number of individual workshops or manufactories, situated at a considerable distance apart, from a single prime mover.

The second part of my invention consists in the combination, with the branch-belt pulleys of adjustable guide-pulleys, arranged as hereinafter specified, to enable the branch belts to be led off in any desired direction.

Description of Drawing.

Figure I is a side elevation of my improved machinery.

Figure II is a plan of same.

Figure III is a side elevation on an enlarged scale of one set of transmitting, distributing, and guide-pulleys, and the frame-work for supporting the same.

Figure IV is a plan of same.

Figure V is a side elevation of a modified form thereof.

Figure VI is a plan of such modified form.

Figure VII is a side elevation showing a modified arrangement of the guide-pulleys.

Figure VIII is a plan of same.

General Description.

A is the prime mover, which may consist of a water-wheel, steam-engine, or other suitable motive power.

A′, the main driving-pulley thereof.

B and B′, the driving-shafts, carrying the driving-pulleys C C^1, and C^2 C^3, and branch pulleys D.

They are supported in proper journal-boxes on the bed-frames E, resting upon the gallows-frames F.

G is the first driving-belt, running over pulley C, and transmitting motion from the prime mover A to the shaft B.

G′ is the second driving-belt, running over pulleys C^1 and C^2, and transmitting in turn the motion of shaft B to shaft B′. The motion of B′ may, in the same manner, be transmitted to a third shaft, and so on to any desired number.

D D are the branch-pulleys, and

I, the branch belts, and

J J^1 J^2, &c., assumed points representing individual work-shops or manufactories to which it is desired to transmit the power of the prime mover.

H H are the guide-pulleys, by which proper direction is given to the branch belts I, as they lead off from pulleys D D; and

H′ H′, similar guide-pulleys, to direct them as they lead on to the driving-pulleys, K K′, &c., of the individual workshops or manufactories J J^1, &c.

The belts G G′ and I are made of wire rope, and the pulleys over which they run have grooved faces to receive them.

As the pulleys K K′, &c., may be located both above and below the horizontal plane of the distributing-shafts B B′, and at various angles therefrom, it is necessary that the guide-pulleys H H should be capable of adjustment to meet such varying conditions. Such adjustment is provided for by supporting them in forked brackets L, projecting from a circular frame, M, bolted to the bed-frame, and concentric with the driving-shafts, the brackets being connected to said frame by bolts and slots, so that they may be readily moved to and secured at any desired point thereon.

The axis of the guide-wheels should be at right angles to a plane tangent to the branch driving-pulley, and parallel to its axis; and the groove of the pulley should lie in said plane. To determine the proper angular position of the guide-pulleys to direct the belt to any desired point, said tangent plane must be turned about the axis of the driver until it becomes tangent to the driver. The guide-pulley being then moved on the frame M until its groove lies in said plane, the desired position will be secured, except that allowance should be made for the deflection of the belt by setting the guide-pulley correspondingly below said plane.

By adjusting the guide-pulleys as above described, the belts will run truly in the groove of the guide-pulleys and drivers without any tendency to wear the flanges thereof.

In the modified form shown in Figs. V and VI, the branch pulleys D are located upon a countershaft, N, driven from the shaft B′ by a pair of miter-wheels, N^1 N^2. The circular frames M are concentric with this shaft, and the guide-wheels H H are attached thereto and adjusted thereon in the same manner as before described.

In the modified arrangement of the guide-pulleys H H, shown in Figs. VII and VIII, they are made adjustable about a line tangent to the branch drivers D, the brackets which support them being hung on trunnions turning in boxes on the bed-frame, one trunnion being hollow for the passage of the wire belt through it, as represented.

This arrangement, while allowing the branch belts to be led off in any desired direction, is open to the objection that the weight of the belt will cause undue wear on the lower flanges of the guide-wheels.

The distance apart of the distributing-shafts B B', &c., as well as their height above ground, will, in practice, vary more or less, according to the requirements of each case.

In distributing power through cities and towns, it will, in many instances, be advisable to run the main line of belts G G' over the tops of the buildings. In such cases the gallows frames F may be located at the cross streets, and the belts G G' made to span entire blocks; or the bed-frames E may have their foundations upon the roofs of the buildings over which the line passes.

In other cases the main line may follow the course of a street, the gallows-frames being erected at one side thereof, or made to span the same, as may be most convenient.

Claims.

I claim—

1. The combination, with the main driving-pulley A', of the prime mover A, and series of driving-pulleys C C^1 and C^2 C^3, and transmitting-wire-rope belts G G', of the branch-distributing pulleys D D, guide-pulleys H H, and branch belts I I, substantially as and for the purpose hereinbefore specified.

2. The combination, with the branch pulleys D D, of the guide-pulleys H H, made adjustable about the axis of the pulleys D D, substantially as and for the purpose hereinbefore specified.

3. The combination of the adjustable forked guide-wheel brackets L with the circular frame M, as and for the purpose hereinbefore specified.

JAMES RICHMOND.

Witnesses:

WM. T. FARNELL,

JNO. J. BONNER.