

No. 819,586.

PATENTED MAY 1, 1906.

I. J. PADDOCK.
MOTOR.

APPLICATION FILED NOV. 13, 1905.

Fig. 1

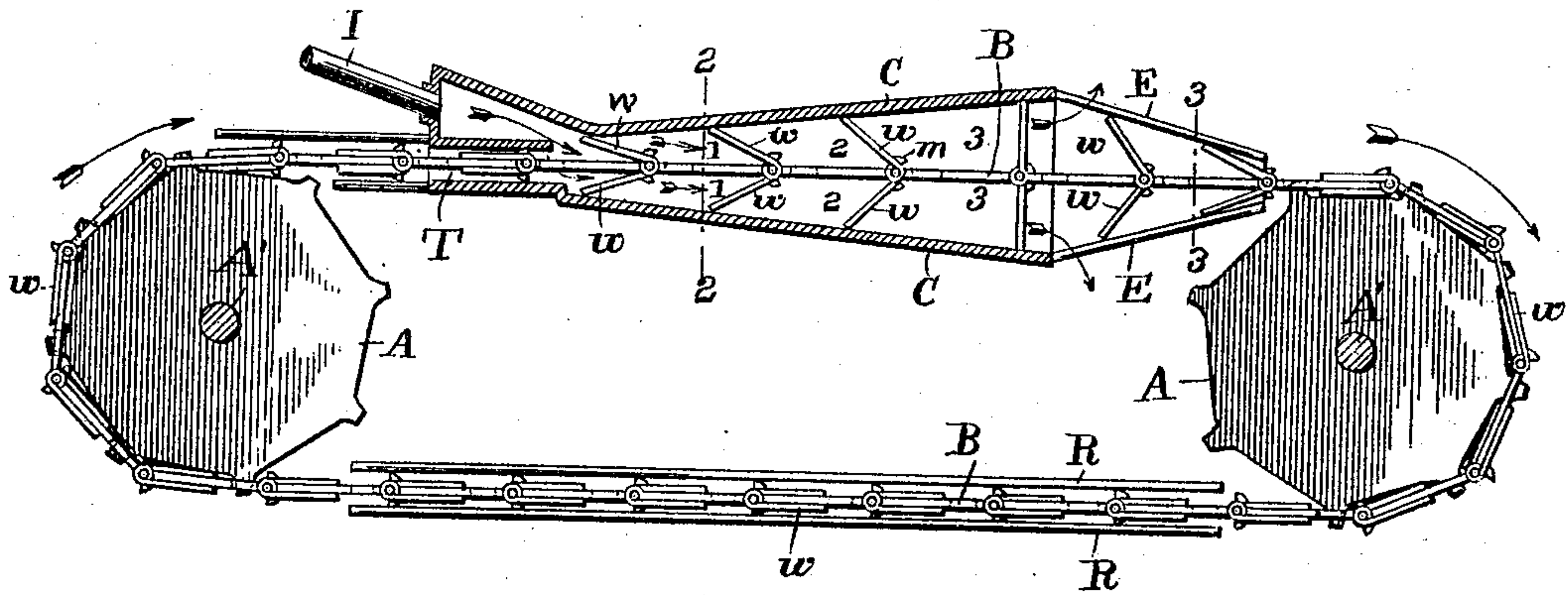


Fig. 2

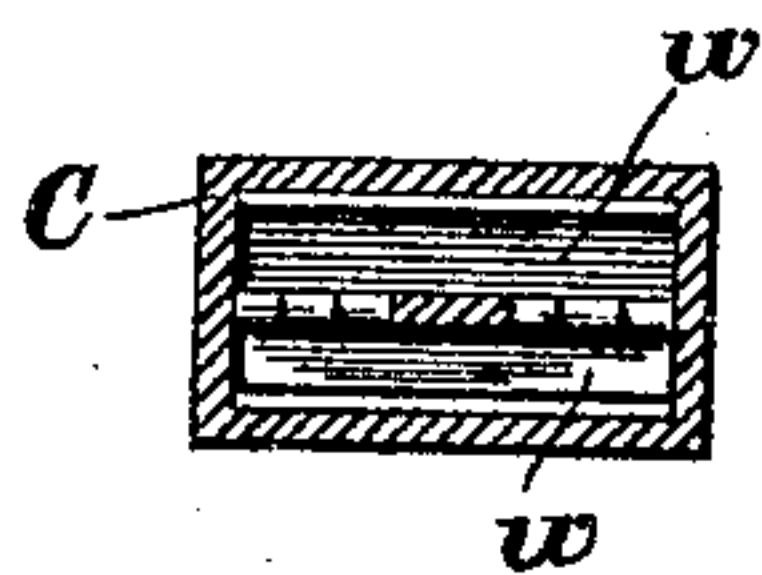


Fig. 3

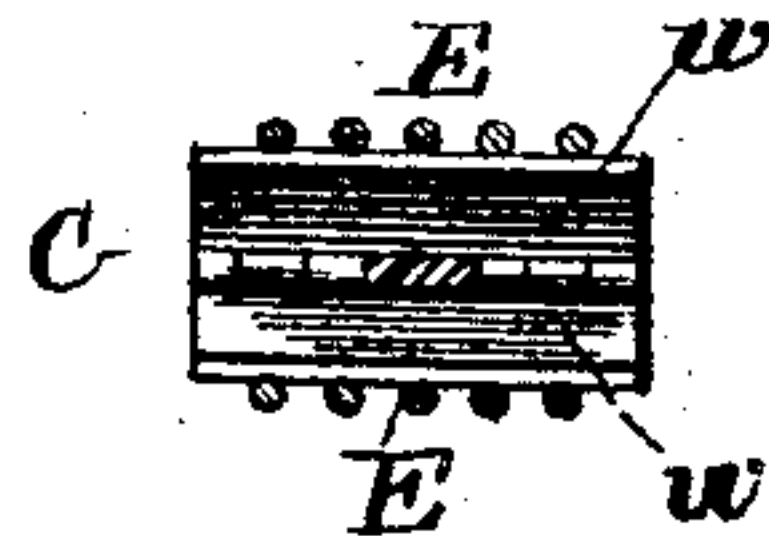


Fig. 4

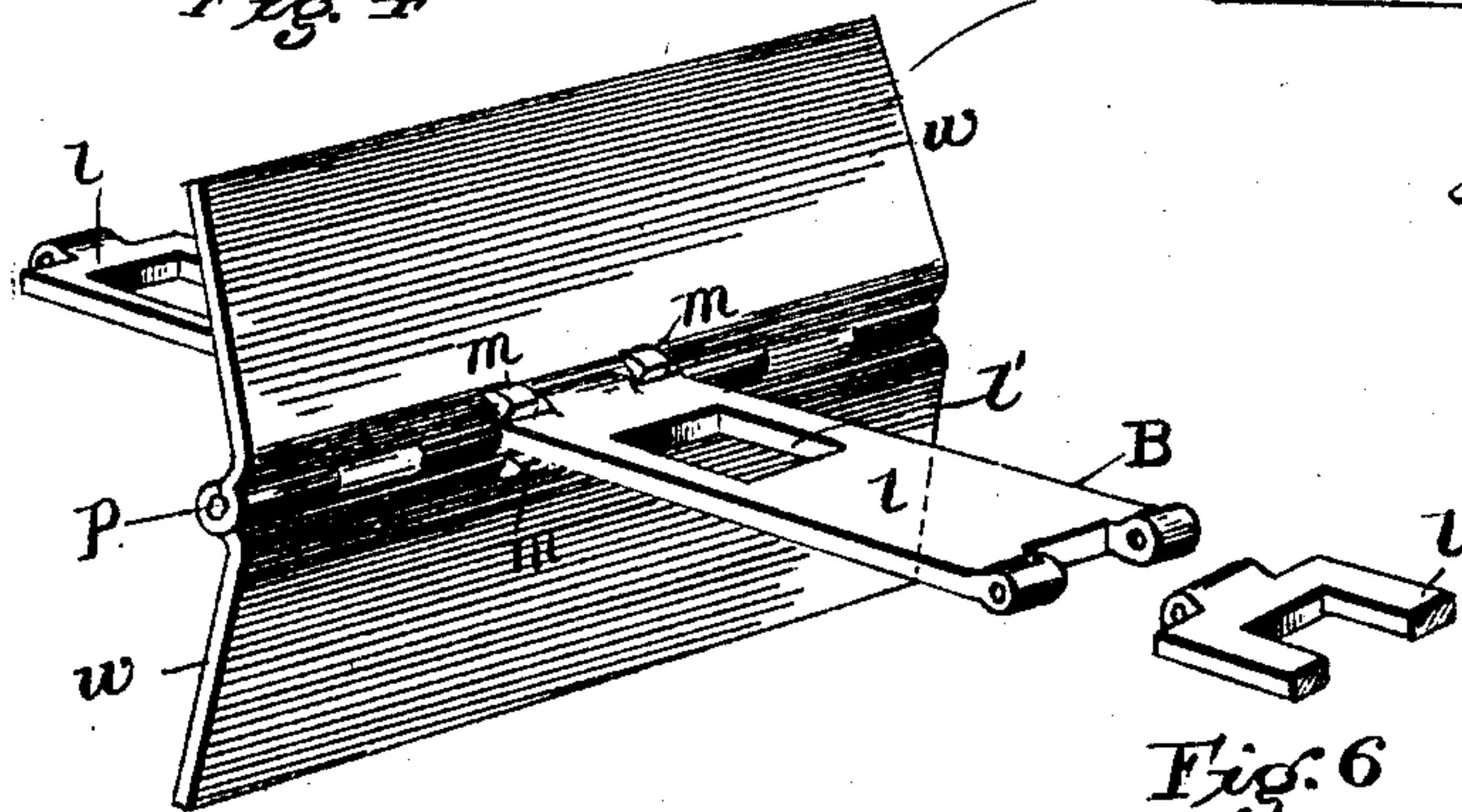


Fig. 5

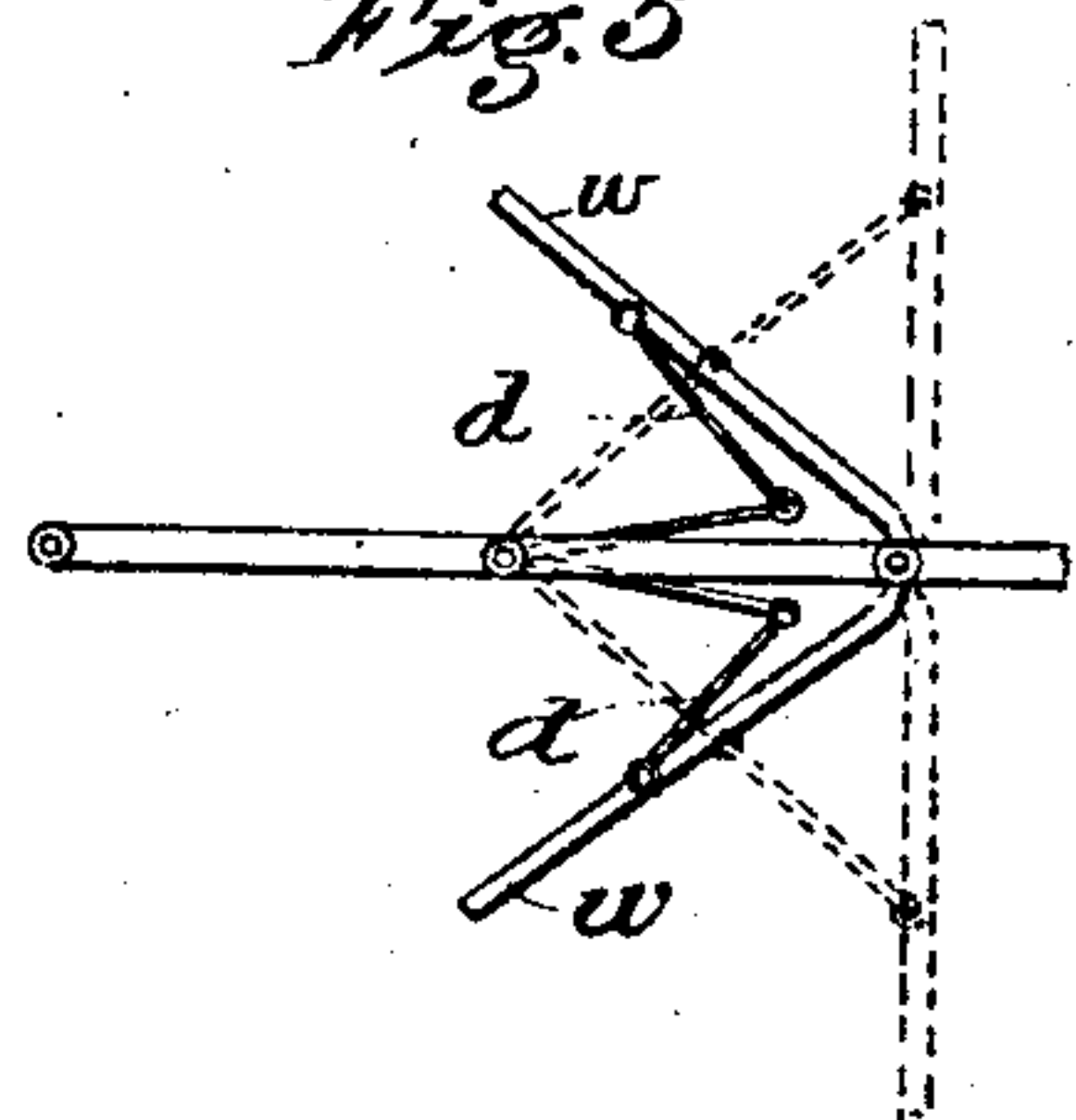
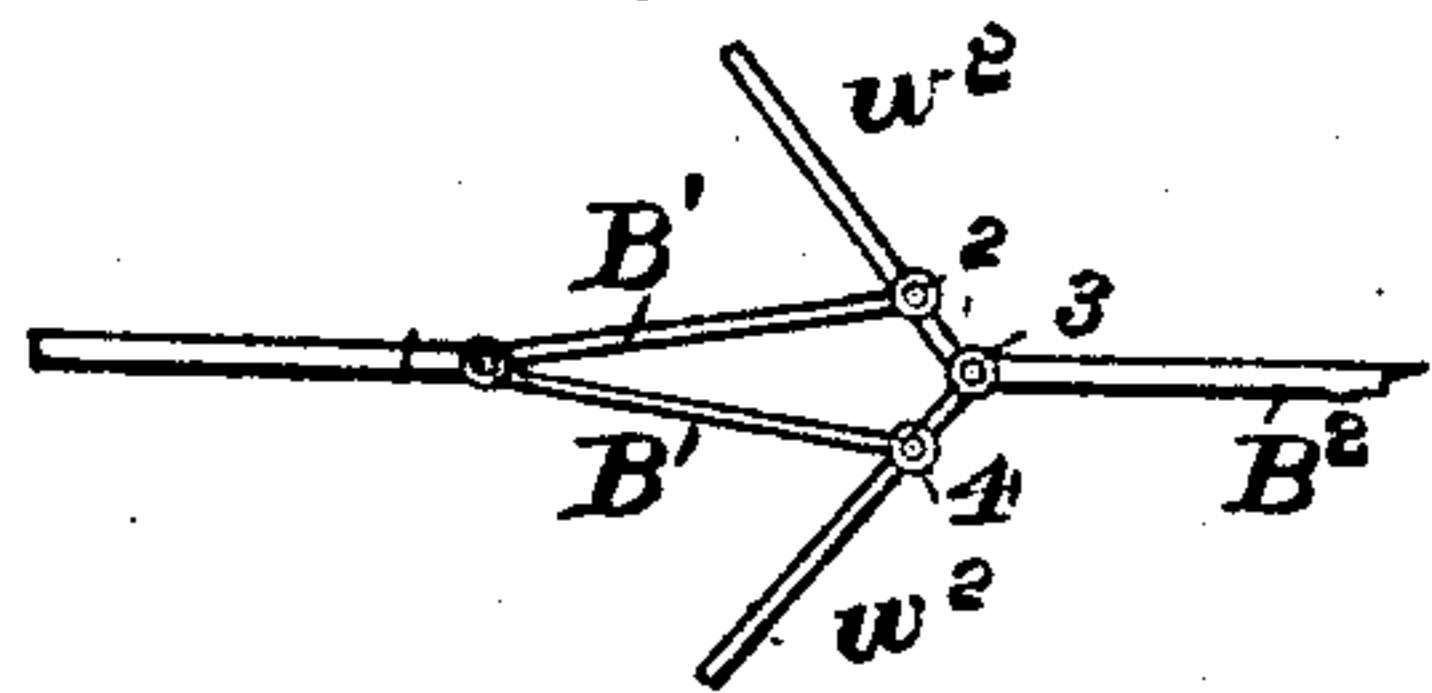


Fig. 6



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No. 819,586.

Specification of Letters Patent.

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Application filed November 13, 1905. Serial No. 287,169.

To all whom it may concern:

Be it known that I, IRA J. PADDOCK, a citizen of the United States, residing at Percival, in the county of Fremont and State of Iowa, have invented a new and useful Improvement in Motors, of which the following is a specification.

My invention is in the nature of a novel construction of motor designed to be propelled by the pressure, momentum, flow, and expansion of any elastic medium, such as steam or compressed air, water in motion, or the gases generated by explosive combustion.

It comprises an endless chain belt, which belt has articulated and folding wings arranged within a tapering inclosing casing, which casing incloses one portion of the belt and its hinged wings and has an inlet at its small end for the steam or other fluid under pressure, so that as the pressure of this fluid comes upon the wings they open and bear in the travel of the belt against the casing and by gradually unfolding expose their surfaces to the pressure of the fluid, all as hereinafter more fully described.

Figure 1 is a side elevation, partly in section. Fig. 2 is a transverse section on line 2 2 of Fig. 1. Fig. 3 is a transverse section on line 3 3 of Fig. 1. Fig. 4 is an enlarged detail of the hinged and articulated wings as attached to the belt. Figs. 5 and 6 are details showing modifications of the belt and its foldable wings.

In the drawings, A A represent two sprocket-wheels fixed to and revolving with their shafts A' A', from either or both of which the power may be taken off in any suitable way.

B is an endless chain belt to which on opposite sides are hinged the articulated and folding wings *w*. These wings in one direction fold flat and lie close against the chain belt and in the other direction open to a right-angular position to the belt, in which right-angular position they are stopped by suitable knuckle-lugs *m*, that preclude a further movement past the right-angular position. The belt is composed of links *l*, and these links are made longer than the wings and have holes *l'* through them beyond the edges of the wings when folded, which openings receive the sprocket-teeth of the wheels and have also a further function, as hereinafter described.

C is the casing, which incloses one or both runs of the belt between the sprocket-wheels A A. At one end the casing has an inlet I for steam or other fluid under pressure and also a throat T, which gives entrance to the belt with its folded wings. From this point on toward the other sprocket-wheel the walls of the casing at the top and bottom gradually diverge until they reach a point where the wings are fully unfolded to the right-angular position and here the casing as a tight inclosure ends. From this largest end of the casing, however, a plurality of parallel rods E extend from the top and bottom walls of the casing in convergent position to a point close to the belt and near the rear sprocket-wheel. These rods form a convergent exhaust-grating, through which and at the sides the exhaust-steam or other fluid escapes, and the convergence of these rods causes the wings as they travel between them to be folded to a parallel position to the belt before traversing the rear sprocket-wheel. After the wings traverse the rear sprocket-wheel they are received between parallel guide-rods R R and are held in the folded position until they reach the front sprocket-wheel to be again entered into the throat T of the casing.

When the folding wings receive the first impact of steam, they open outwardly and bear against the divergent walls of the casing, and as they travel along they continually expand more and more until the right-angular position is attained. This secures an important result, in that as they travel rearwardly they continually offer a greater pressure area and as the chambers 1 2 3, &c., between the wings are of continually-increasing volume the full benefits of the expansion of the elastic medium are obtained.

The openings *l'* in the links *l* of the chain belt, it will be seen, not only serve to engage the sprocket-teeth, but also in case the belt is the same width as the wings give passage for the steam from the upper to the lower side of the belt, thus making its pressure effective both against the wings above and below the belt.

I do not confine myself to any particular means for attaching the articulated wings to the belt; but in Fig. 4 I have shown one desirable form for doing so in which the same pintle-pin P which connects the links of the chain belt also passes through the tubular

sockets of the wings above and below the belt, while lugs *m* limit the unfolding range of movement to the right-angular position.

It will be seen that the wings of my motor form an endless series of pistons or buckets, always traveling in the same direction and securing all the advantages of a rotary engine.

As a modification of the endless belt with foldable wings I may construct it as in Fig. 5, in which the upper and lower wings *w w* are held by jointed toggle-arms *d*, which arms when straightened out limit the opening movement of the wings to the right-angular position and when folded allow the wings to lie flat and parallel, or I may make it as in Fig. 6, in which two wings *w² w²* are connected to links *B' B'* at 2 and 4 and to link *B²* at 3, so that the tension of the belt has a tendency to close the wings, which latter are opened by the pressure of steam against the left-hand side. This construction in Fig. 6 would do away with plurality of rods *E*.

In pointing out the advantages of my motor I would state, first, that the application of the power of the fluid is in a straight line; second, the flow is continuous and not pulsating; third, the leakage past any one piston (folding pair of wings) is caught by the next piston; fourth, the parts all move with a continuous motion and there is no loss of power from stopping and starting, as in a reciprocating or oscillating motor; fifth, the steam or other elastic fluid is used expansively.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A motor comprising an endless chain bearing folding wings, wheels distending the same and a casing having a tapering form diverging from the inlet end to the exhaust.

2. A motor comprising an endless chain bearing folding wings, wheels distending the same, a casing having a tapering form diverging from the inlet end to the exhaust, and an open converging exhaust-chamber.

3. A motor comprising an endless chain bearing folding wings with a limited articulation, wheels distending the same, and a divergent casing having a convergent exhaust end.

4. A motor comprising an endless chain belt having hinged wings with coinciding sleeves on opposite sides of the belt said belt being formed of links whose pintle-pin also extends through the sleeves of the wings and forms bearings for the same, wheels distending the belt and a casing inclosing the latter.

5. A motor comprising an endless chain belt having hinged wings, links of greater length than the hinged wings and having openings in the same beyond the edges of the wings when folded, wheels for distending the belt, and a casing inclosing the latter.

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Witnesses:

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