effected in the least admissible time. Ten seconds, with a properly adjusted power weight, is estimated to be sufficient for a movement of the cradle through a space of 12 feet, while the winding up of the weight may require two or three minutes labor of a man. The operator is thus enabled to condense the labor of several minutes into only a few seconds.

It is proposed to give the power weight twice the force necessary to overcome the friction, allowing one-half to overcome inertia, and act as an accelerating force; the weight being made to run down and be arrested when half the movement has been effected, leaving the acquired momentum to be destroyed by the friction during the other half of the movement. Thus the motion will stop at the right time without concussive shock.

The wheel to which the winding power is applied, may be a bevel gear wheel driven by a pinion upon the vertical shaft of a tread-wheel or a sweep-lever, or a spur gear wheel impelled by a pinion upon a horizontal counter-shaft; and this also furnished with a large gear wheel to be driven by a pinion upon a third shaft furnished with a hand crank; thus reducing the power to be applied to the crank to any required degree. Further detail is not deemed necessary on this occasion. The plan is expected soon to be subjected to a practical test of its capabilities.

The advantages promised by the adoption of this device, in the situations admitting of its use, are, first, it is more cheaply constructed than a swing bridge of like span. Second, it requires no more space for its operation than a stationary bridge, while the swing draw requires several times as much. Third, its movement is effected in a fraction of the time required by