

the brake band is of leather, and the slack portion consists of two strips of copper. In the mean position, each portion embraces about one-half of the circumference of the pulley, and its end is attached to a lug projecting from a rod. The lug to which the slack portion is joined is capable of sliding along the rod and, by means of a screw, can be adjusted so as to increase the slack tension as desired and therefore to produce any required total drag. The rod in the direction of its length has a practically frictionless range of 5 inches, which corresponds to a variation of about 16° in the angle of band contact. The resultant force along the rod is the difference between the tight and slack tensions, and measures the drag. The force is balanced by dead weights which are placed in a tray at the top of the rod for a vertical wheel and, if the wheel is horizontal, in a scale-pan suspended by a cord which passes over a frictionless pulley and is attached to the head on the rod.

If, from some cause, the band friction should increase, the drag would also increase, and there would be a corresponding movement of the rod. Thus, a portion of the leather band would be unwrapped, while an equal portion of the copper band would be brought into contact. But the frictional co-efficient for leather exceeds that for copper, so that the drag would be less and would continue to diminish until it again balanced the weight. The reverse, of course, would be true, if the band-friction should diminish. The rod would move in the opposite direction, an excess of the leather band would be brought into contact and the drag would continually increase until equilibrium was again restored.

Hence, within a certain range, the band will find a position of equilibrium, although the friction may vary, and the total drag will then be measured by the dead weight in the tray or in the scale-pan.

If the movement of the rod should be so great that it may come against one of the stops provided to limit its action, the drag can be readjusted by means of the screw attachment. This, however, is very unlikely to happen, as the range already allowed is sufficient to admit of a large variation in the value of the co-efficient of friction. It has been found that the best results are obtained by running the wheel without any lubricant on the rim; care should be taken to protect the rim from water or oil, which would necessarily produce a considerable variation in the frictional resistance.

This brake has been in use only a few months, but in the several trials which have been made it has fully realized the expectations that