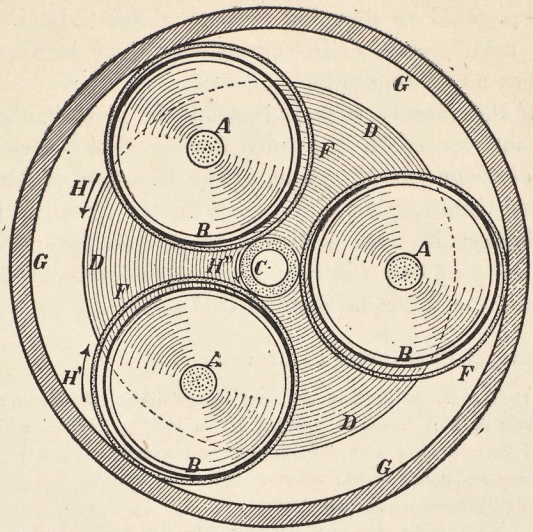
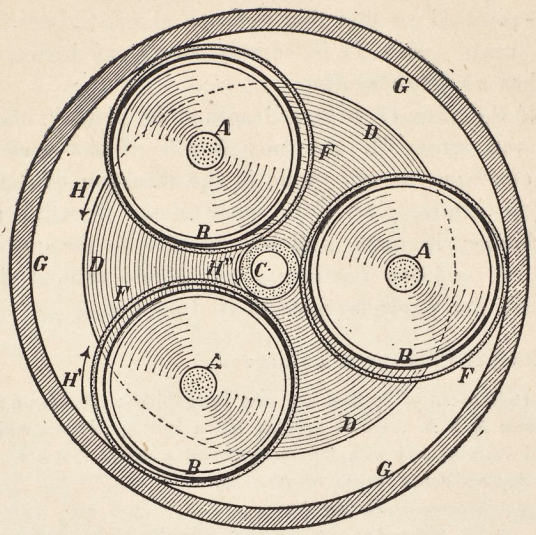


The Centrator Gearing.

»Having with much interest studied the Hult Brothers' Frictional Gearing (also called the Centrator Gearing), as applied to the 'Butter-

work and driven at about 670 revolutions per minute by a crank and a common cog gearing. On the disc D there are placed three pivots A A A at an equal distance from each other and from the centre. On these are pivoted rolls B B B of equal size, and on the



The Centrator Gearing.

»Having with much interest studied the Hult Brothers' Frictional Gearing (also called the Centrator Gearing), as applied to the 'Butterfly' Milk Centrifuge, I have pleasure in submitting the following report thereon.

Old experience shows that valuable mechanical contrivances usually are very simple. This is also the case with this Frictional Gearing; it is exceedingly simple which circumstance contributes not inconsiderably to its attractiveneness.

It consists of a disc D journaled on a crank pin in the frame work and driven at about 670 revolutions per minute by a crank and a common cog gearing. On the disc D there are placed three pivots A A A at an equal distance from each other and from the centre. On these are pivoted rolls B B B of equal size, and on the

outside of the rolls are passed wide steel rings F F F about 2 mm. ($^1/_{13}$ inch) thick, with plenty of room for wabbling on the rolls. The steel rings are pressed in between the inside G of the frame and the centre pivot C so that they become about $^1/_2$ mm. ($^1/_{52}$ inch) oval. The centre pivot C is entirely supported between the steel rings and has no other bearing.

Now if the disc D is turned around its pivot in the direction shown by the arrow H, the rolls B will effect the steel rings F which in concequence will rotate in the direction of the arrow H′ and cause the central pivot C to rotate in the direction of H″.

The friction is quite sufficient to give to the centre pivot C a velocity of 5—6,000 revolutions per minute without slipping. — And with this the whole mechanism is described.

Its principal characteristics are:

1. That the resistances of friction are very insignificant: Besides a little friction in the pivots A A A, there is nothing but a rolling friction, which, between the turned surfaces and with the insignificant pressure that here occurs, does not offer any resistance worth mentioning.
2. That the equilibrium is simply perfect.
3. That the centre pivot has no bearing whereby an otherwise unavoidable resistance of friction is done away with.
4. That there is no possibility of the bearings running hot, for there is no centre pivot gear and in the pivots A A A both the pivot pressure and the velocity of rotation at the periphery are very moderate.
5. That the gearing is noiseless. If the centre pivot is driven at about 5,500 revolutions no other sound can be perceived than that arising in the outer cog gearing.
6. That it is strong and effective. If it is braked a little on the centre spindle, until the resistance in the outer gearing is brought up to what that gearing can bear, no slipping can be perceived in the steel rings.
7. That it is just *as well adapted to gearing down from great velocities to smaller ones as vice-versa.*

Everyone who has had some experience in mechanical matters has, no doubt, often been perplexed as regards the most proper and reliable and the most convenient manner of effecting great rotary speeds.

We have, to be sure, belts and cog gearings as well as the inverted endless screw. But belts take up much room, so that in many instances they are not practicable, and everything called cog gearing is a perishable thing at a velocity of 5,000 revolutions per

minute, apart from the wellknown and unpleasant noise caused thereby at high speeds.

The frictional gearing, invented by the Hult Brothers, is especially well adapted to high rotary speeds, and should therefore be very welcome in Engineering Circles. If experience shows that it will stand wear, it will be excellent for driving **Milk Separators (Centrifuges), Fans, Exhausters, Centrifugal Pumps, Dynamos** etc., and for these purposes it seems to lend itself as a confirmation of the doctrine of the 'survival of the fittest'.

I wish this simple and ingenious mechanical novelty all success, and think it is one of the most interesting that have been heard of during the last few years.

Stockholm in February 1897.

J. L. Frykholm,

Late Director of the Engineering Works of the Royal Swedish Navy at Stockholm.»

During the two years which have elapsed since the above report was delivered we have applied this Centrator Gearing to several thousand machines made by us, such as Milk Centrifuges, Grinding Machines, Fans, Centrifugal Pumps, Dynamos etc., and we have *in every instance* attained the very best results. The gearing has proved perfectly durable, and it has been fully confirmed that by transmitting power in this way the loss of power caused is much smaller than by the use of cog wheels or beltings.

The Centrator Gearing is the most perfect frictional gearing existing, and it is easily so arranged that it *instantly* can be put into motion or disengaged.

By experiments we have found that *any* amount of power can be transmitted by means of this gearing.

At the *General Exhibition at Stockholm 1897* the First Prize, Gold Medal, was awarded our machines because of — as the Jurors say — *»A most ingenious and practical gearing called Centrator»*.

Stockholm in February 1899.

The Centrator Company, Lim.

Stockholm 1899. Kungl. Boktryckeriet.