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METHOD OF IMPLEMENTATION OF UNILATERAL INDUCTION

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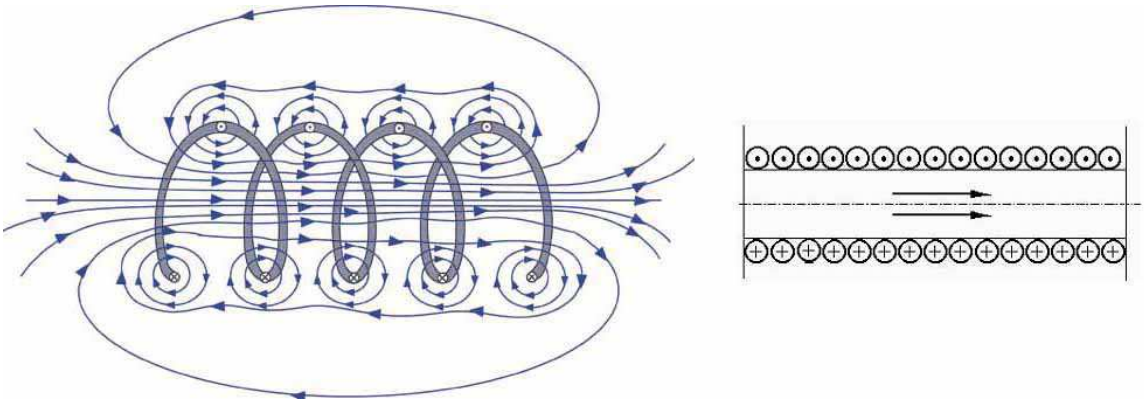
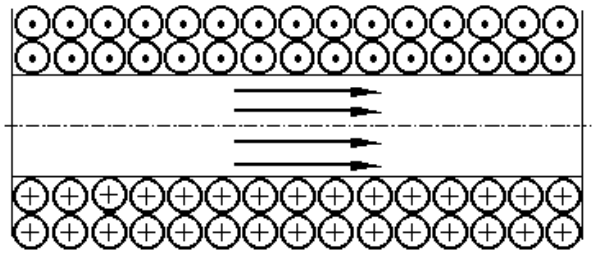
It is extremely simple, and even more **obvious,** therefore, for clarity, and illustrated by several drawings, an example of the simplest devices.

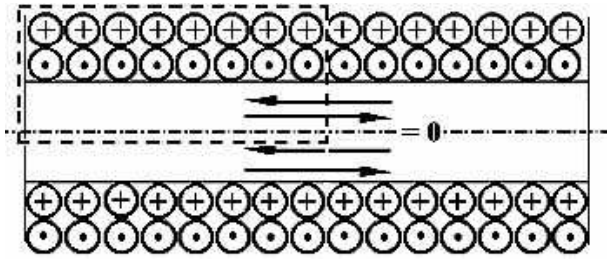


The first two pictures - just a reminder - as schematically depicted by the magnetic field of the solenoid. On the right is shown a cut solenoid on its axis as it is to be displayed next. Accordingly, the circles with crosses - cuts the wires on which the current flows from the observer. Circles with dots - cuts the wires on which the current flows to the observer. Solid arrows - the direction of the magnetic flux inside the frame on which is wound a solenoid. Solid lines - cut frame (coil), which is wound a solenoid.

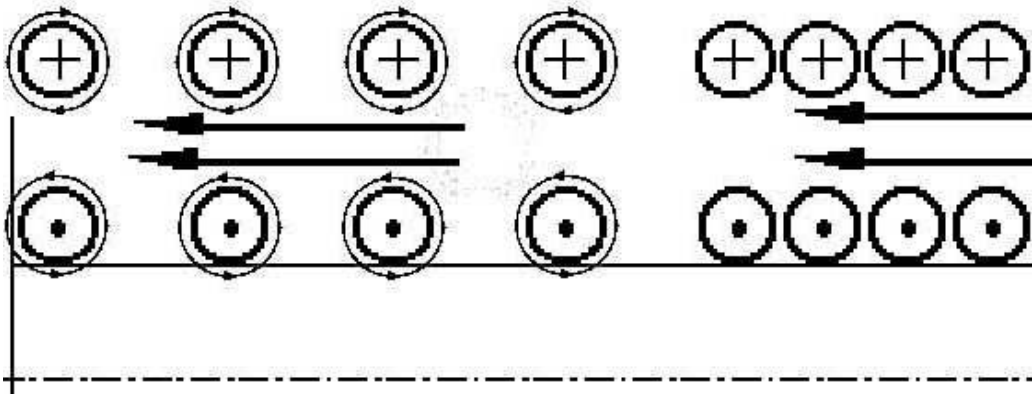
From the same figure that if you do not restrict ourselves to the wire-wound in one layer, and, on reaching the cheeks of the coil, to continue to wind the wire back the second layer in the same direction, then cut a two-layer coil is as follows.



Hence it is clear that very different picture of the magnetic field is a two-layer coil, if after the end of the first layer of winding the wire is bent 180 degrees back and the second layer is wound in the opposite direction. The field of the coil is already so.



In this figure, the arrows and signs toward equality with 0 mean that the inside (and outside, by the way, too) of the coil of the magnetic flux does not. The magnetic flux generated by the first layer offset by a counter magnetic flux from the second layer. Therefore, it seems that such an induction coil is completely free. It is simply a variant of a unique bifilar without induction winding. Since in such a winding the first and second layers are wound parallel to the wires, only one layer above another, and the conclusions they are connected to some one end of the coil.



However, it is not. To see this, you need to turn to the consideration of only the dotted and the larger fragment of the latter figure. The layers in this case, in addition, moved away from each other, as it has in the real device. At least the thickness of the insulation between them. The turns of wire on the left side of the figure apart only in the figure for clarity, to fit the circles with arrows showing the direction of the magnetic flux produced by the individual wires.

As can be seen from this figure, the magnetic flux between the layers apart, the primary winding is even there is not going away. He is not compensated. Cancel each other when the magnetic flux of such winding wires just above or below these two layers. And that's why these two layers and serve as the primary winding of the device with one-way inductive coupling. The secondary winding is wound the most usual way. And of course in all cases, both of which should be placed on a common magnetic circuit closed to them. The secondary winding may be located outside of the primary. Or it may be located directly between the layers of the primary. Visible device parameters from this change is insignificant. Tested. The internal arrangement of the secondary winding was done in the very first prototype. Schematically, an initial layout and connection of the windings can be represented as follows.

Inductive coupling of the primary winding of the secondary at the expense of itself is not compensated part of the magnetic flux. And it is not as weak as it may seem at first sight. In the first prototype of the coupling coefficient of the primary winding of the secondary (he efficiency of the device) is approximately 30%. And after all, this pattern is not being manufactured in order to reach its maximum value, but only to verify the very existence and operation of this part is not compensated magnetic flux.

When applying the same AC voltage on the inner secondary winding, the EMF in the primary winding should be occur. But in this case arise, it should be the same size and the "one direction" in both layers of the primary winding. As a result, with such winding parallel to these layers, the difference in potential between the terminals of the primary winding (1 and 2), the induced current in the secondary winding current, is always equal to zero. Of course, and the closure of the findings of the primary winding ammeter, no it does not show current. That is, as a result of the primary winding is generally not sensitive to the "outsider" to the magnetic flux, even though the "own" the magnetic flux created when applying voltage to it. This is the basic unit with one-way inductive coupling.

The validity of this conjecture has been verified in several made in this way, prototypes, differing in size, magnetic circuits, and a cross section of the windings, etc. Known inductive coupling with the secondary winding of the primary, there is no one model. It is natural, and with this method of winding the primary winding. But the inductive coupling coefficient of the primary winding of the secondary in these samples varies widely. However, and this is also quite natural, given their structural differences.

One might add that the entire primary winding inductance of the whole of such devices even if they have a closed magnetic circuit is really very low. That, however, was to be expected. Lower than that of any single layer. But this is not fault and not an advantage. It's just a difference from the usual winding. In certain limits, to increase the inductance of the magnetic circuit allows the use of the material with as high magnetic permeability. Otherwise, get even, and very low inductance of the primary winding. (He was, incidentally, is also possible to increase going to work at higher frequencies.) For example, a laboratory generator GZ-123, with a stabilized voltage output signal, the test samples with the ferrite magnetic core that was available, does not hold in a given mode no-load voltage. To compensate for this phenomenon between terminals 1 and 2 are soldered capacitor, making the primary winding of a parallel resonant circuit. Of course, the capacitance of the capacitor at the same time was calculated such that the resonant frequency of this circuit was the same as the frequency of the applied signal (299 kHz).

As for the one-sidedness of inductive coupling is basically it. (For the pump hub - a single conversation http://www.sciteclibrary.ru/rus/catalog/pages/11197.html) It is certainly possible to create devices with one-way inductive coupling on this principle, but a technical performance. It is possible that can be found, and a principle ... Indeed, in general, unknown to the author - and there were all still searching for ways to implement a one-way inductive coupling, except for proposals for the use of a secondary winding of a flat spiral coil, located inside a solenoidal primary winding. "Flat-spiral way." However, found a way to implement a one-sided inductive coupling differs from it radically. The most significant differences are as follows. First, the efficiency of a "flat spiral devices" substantially lower than those found. It is because of the lack of "flat-helical device," a closed magnetic circuit, and thus any substantial connection with the primary winding of the secondary, because in this case, the magnetic leakage flux is much higher than the magnetic flux linkage. Secondly, the "flat-helical device," there is no one-sided inductive conductivity in principle. They have only the asymmetry of inductive coupling between the windings. As shown by numerous experiments with these devices, asymmetry, and they have very small, but also significantly changed (not for the better), depending on other parameters of the device, the frequency applied to the input of the device current and the magnitude of its voltage. However, the lack of one-way inductive coupling is clearly seen from the figure, similar to the above, a schematic showing the distribution of magnetic fluxes generated by the windings of the device. And, as a consequence of differences in design, there are other differences in these devices.

PS Ready to cede ownership of the patent for the invention of RAS.

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