Improved Friction Clutch Pulley.

Our engraving illustrates another new claimant for public favor in the line of friction clutch pulleys. The working model, which we have seen, operates very smoothly and powerfully, without noise or jar, and the device presents a very neat compact appearance.

The following is a description of its parts and operation. A and B represent pulleys attached to a shaft, so that by the movement of the collar, C, one may be clutched while the other may be unclutched. The collar is shown in detail at the bottom of the engraving, though, as there shown, it is adapted to the clutching of a single pulley. When used for two pulleys, it has two wedge-shaped projections formed thereon, placed on opposite sides. The collar has a groove turned out in the middle, in the usual manner, for the shifting lever.

The pulley is shown in detail at L. It has a projecting rim, I, so that an annular space is inclosed between this rim and the exterior or belt rim. This pulley turns loose on the haft, except when clutched.

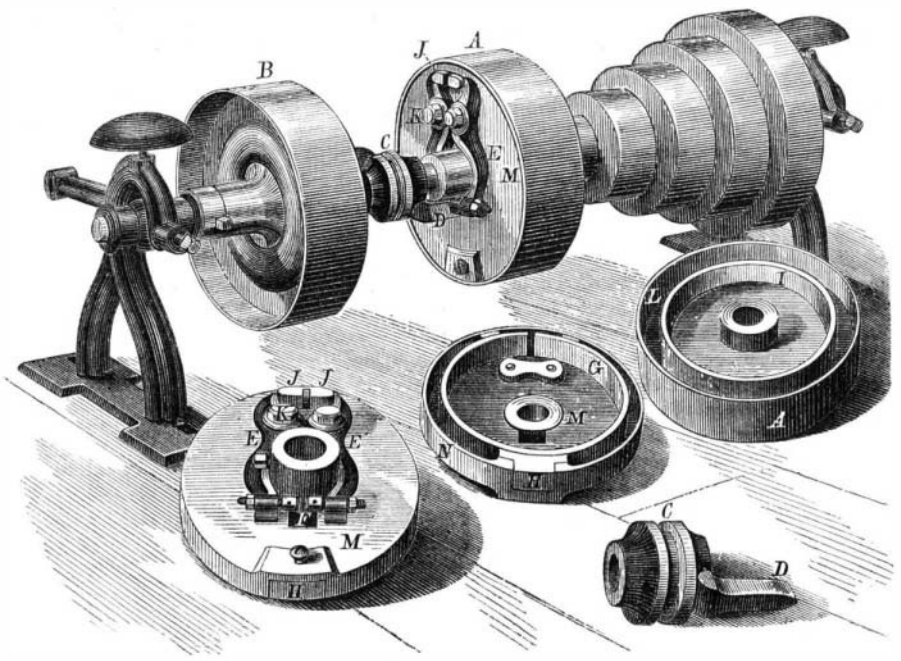
The clutching device consists of a plate or disk, shown in detail at M. It is cast with a rim, N. To this plate is attached a ring, cut apart opposite the point of attachment at H, as shown, the ends formed by cutting the ring, having projections, J, formed upon them, which pass through a curved slot in the plate, M.

On the outside of the plate, M, are pivoted, at K, two bent levers, E. At the ends of these, furthest from the pivots, are two adjusting screws, F, between the heads of which the wedge-shaped projection, D, on the collar, C, enters when the latter is actuated by the shifting lever, causing the pivoted levers, E, to compress together the projecting ends, J, of the ring, G. The plate, M, with these attachments, is keyed or held by set screws to the shaft in such a way that the ring, G, surrounds the projecting rim, I, on the pulley, L.

The collar, C, is feathered on the shaft so that it always maintains its relative position with the plate or disk, M, and at any point of its revolution a proper movement of the shifting lever will force the wedge-shaped projection, D, between the heads of the screws, F, causing the levers, E, to compress together the projections, J, on the slotted ring, G, and, drawing the latter firmly down upon the projecting rim, I, clutch the pulley.

When the pulley is to be unclutched the shifting lever is reversed; the projections, J, then being relieved from pressure, the ring, G, expands by its own elasticity, and releases I.

Patented, Nov. 1, 1870, by Edwin F. Allen, of Providence, R. I. For further particulars address the Star Tool Co., Providence, R. I.



ALLEN'S FRICTION CLUTCH PULLEY

Electro-magnetic Motor for Sewing Machines.

The following is a description of an electro-magnetic motor, as applied to a sewing machine, taken from the specification of Messrs. Stevens and Hendy, of San Francisco, Cal., to whom letters patent were granted last July. The inventors claim that although they illustrate the invention as applied to a sewing machine, it is really capable of being employed in working various other machines. It consists in a novel arrangement of the apparatus which forms the motor, and which, according to the inventors, enables greatly increased results to be obtained from the coils with the same pulley power. It will be seen that the armatures drive the needle bar directly, without the intervention of levers or other mechanism; while the feed movement is also very simply arranged, and is likewise driven directly from the armatures.

Fig. 1 is a side view of the essential portions of the apparatus; and Fig. 2 is a vertical transverse section of one pair of coils, and also shows the feed motion. The following description applies to the two figures.

A is a case which rests upon the top of a cabinet, and serves to conceal portions of the machinery; it also serves as a table for the work; two pairs of coils, B and C, are placed so that their upper ends stand just within or at the bottom of the case, A, to which they are secured; these coils are placed at such a distance apart as to admit of the working of an oscillating beam, D, which is supported on standards over their central line; this beam is balanced so that the magnets or armatures of one pair of coils are connected to one end, and those of the other pair to the opposite end.

The coils are constructed as shown in Fig. 2, being formed of insulated wire, coiled to a suitable size, leaving an opening through the center sufficiently large to admit the magnets and their armatures. The coil is surrounded by an iron cylinder, which greatly increases the power of any given coil. Outside this cylinder another coil may be placed, and this, in turn, enclosed by another iron cylinder; this gives good results, but not so great, in proportion, as are obtained from a single coil and cylinder, which the inventors consider sufficient. The magnets, *b* and *c*, are made, as usual, of soft iron, and each pair of bars united by a plate, *d*, across the top; or they may be formed in one piece, as a U magnet reversed.

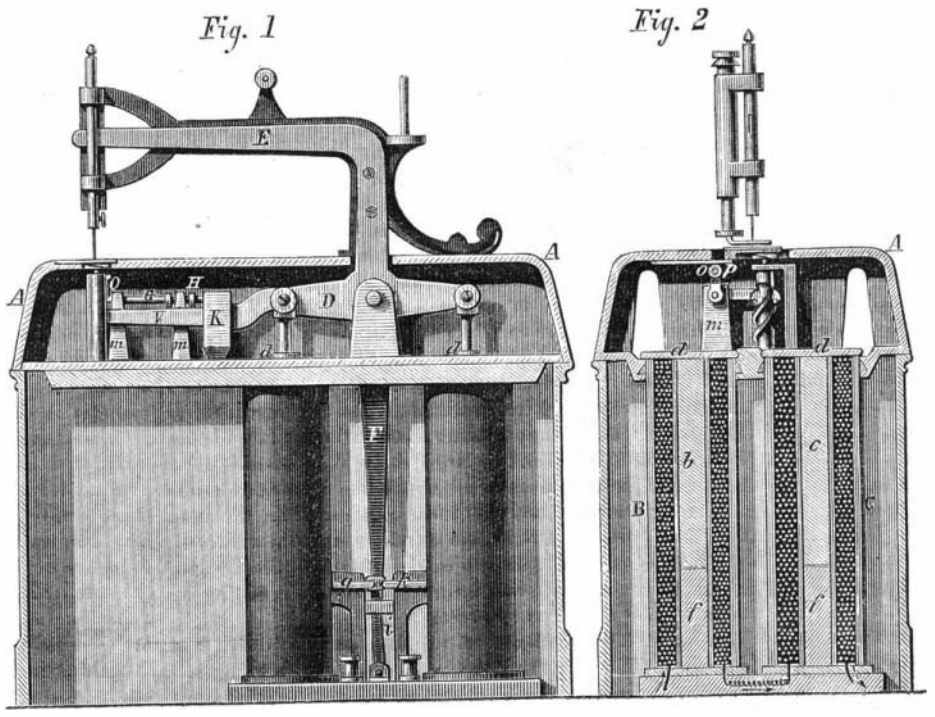
The magnets extend down into the coils about two thirds of the depth of the latter, and the armatures, *f*, arise from the bottom, about one third of the hight of the coil, this construction also adding greatly to their power. The oscillating beam, D, has one end connected to each of the plates, *d*, and from some convenient point on its length the needle bar, E, arises and extends forward to the table of the sewing machine, over which the work passes. From the center of the beam, D, an arm, F, depends, and as the beam oscillates from the alternate attraction of the magnets, at either end, this bar vibrates from side to side, striking alternately pins on a vibrating bar, *i*, which is pivoted at the bottom, and which is also caused to move from side to side. This alternately forms and breaks contact with the two pole changers, *g* and *h*, and causes the pairs of coils, B and C, to act alternately, thus moving the magnets, *b*, *c*, the beam, D, and the needle bar, E.

The feed motion is operated in the following manner: A bar or arm, V, extends forward from the end of the beam, D, and partakes of its oscillations. Two standards, *m*, *m*, support a shaft, G, which lies parallel with and a short distance from the arm, V. At one end of the shaft is an arm, H, which projects over the arm, V, and as this oscillates it moves the arm, H, up and down, thus partially rotating the shaft, G, back and forth at each oscillation. A small crank arm, *o*, is fixed to the opposite end of the shaft, G, and the upper end of this is so attached or connected to the feed plate, *p*, as to move it forward and back, raising it at the proper time.

If found more desirable, two or more pairs of coils could be connected with each end of the oscillating beam, D, but the inventors have found one pair sufficient for all ordinary purposes.

In order to prevent noise, and diminish the force with which the magnets and armatures would meet, the arms, V, pass through a case, K, within which are placed elastic cushions, above and below, and against which the bar strikes as it moves.

The inventors also patent a form of "switch," by means of which they are enabled to control the battery power, employing either two, four, or any number of cells required. They do not, however, give any information as to the cost of operating the machine by this means.



ELECTRO-MAGNETIC MOTOR FOR SEWING MACHINES.

IMPROVEMENT IN EXTRACTING SPIRITS OF TURPENTINE FROM PINE WOOD.

An invention patented by James D. Stanley, Washington N.C., consists in attaching to the retort, or still, two purifiers, each containing lime, or other substances, through which the spirits of turpentine, oil, tar, etc., are passed in the form of vapor, and after purification carried to condensers, and fixed in cisterns.

Wire gauze supports are stretched across the first purifier, to sustain or separate purifying substance or substances. The second purifier has, at one end, a perforated sheet of iron, with wire gauze stretched across it, to retain in place the purifying substance.

The condensers are of copper, or other suitable material, and of the form of a hollow cylindrical ring. They are fixed in cisterns, and kept full of cold water.

The retort having been filled or charged with pine wood, and water introduced to the depth of top of grate bars in the furnace, heat is applied, underneath the retort, the draft passing through flues, over the retort, and off through the smoke stack; or the heat may be applied by the introduction of superheated steam into the retort. The white spirits of turpentine now pass off in vapor through a valve into the first purifier, into the first condenser, and are thence drawn off purified and free from tarry odor.

As soon as the spirits begin to show color, the valve is closed, a cock opened, and the water in bottom of the retort drawn off. The remaining colored spirits, oil, tar, and gas, pass off through the second purifier into a second condenser.

The pyroligneous and acetic acids retained in the purifying substances can, it is claimed, be distilled or separated from them with less trouble and expense than by the ordinary method.

The principal advantage of this method is, however, that by closing the valve, as soon as the spirits passing through it begin to show color, the first purifier and contents, as well as the first condenser, are kept clean, so that white spirits can be run through them from subsequent charges; whereas, if colored spirits were suffered to pass through them once, they would have to be carefully cleaned (a very difficult matter) before they could run white spirits again, and colored spirits have to be redistilled several times to render them white, or nearly so.

Thus the inventor accomplishes by one process what has heretofore required several.

Jute in the United States.

A correspondent of the Agricultural Department at Washington speaks of the raising of jute for textile purposes, in the Southern States, as follows:

"I deem it almost as great an acquisition to the country as cotton itself. It yields one of the cheapest fibers which nature produces. It is raised in India, and, I presume, can be raised here, for less than one half the cost of hemp, and for one fourth the cost of cotton. It has been produced in India for one cent per pound of fiber. It is woven not only into gunny cloth and gunny bags, but enters largely into carpets and many kinds of tissues. In India, jute has been constantly gaining upon cotton. England has imported from India, of this article, more than 120,000,000 pounds in a single year; and we, last year, imported more than 19,000,000, which cost more than $3,000,000, and sold at the South for $5,000,000. It is used there, chiefly, to envelop cotton.

"If we had diverted that amount of labor from cotton to jute, we might have raised a much larger quantity at home, and at the same time have increased the value of our cotton crop.

"The jute seems to me to be a plant admirably adapted to the wants of the South. She requires it for bale cloth, also to divert labor from cotton, and to employ the operatives during inclement seasons in the manufacture of cloth.

"I presume that the mechanism used in Kentucky for spinning and weaving hemp, will be appropriate for jute."

These suggestions we regard as worthy the serious attention of Southern agriculturists. The uses of jute are annually increasing, and there is little danger of a glut of this valuable material.

DISINFECTANTS TO ARREST THE PROGRESS OF ZYMOTIC DISEASE.—We must strike off at once a whole class of valuable agents which will not meet the requirement of the case. The infectious matter is a vapor of fine dust, and it is hopeless to attempt to combat the virus by non-volatile disinfectants, such as charcoal, chloride of zinc, etc. What is wanted for general purposes is a liquid volatile disinfectant, such as carbolic acid, which, after acting on infected surfaces, will pervade the atmosphere, and destroy the floating virus.—*W. Crooks, F.R.S.*