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MACHINE FOR FACILITATING PACKING OF MAGNETIC OBJECTS OF OBLONG SHAPE.

APPLICATION FILED JUNE 1, 1917.

1,330,113.

Patented Feb. 10, 1920.

2 SHEETS—SHEET 1.

Fig. 1

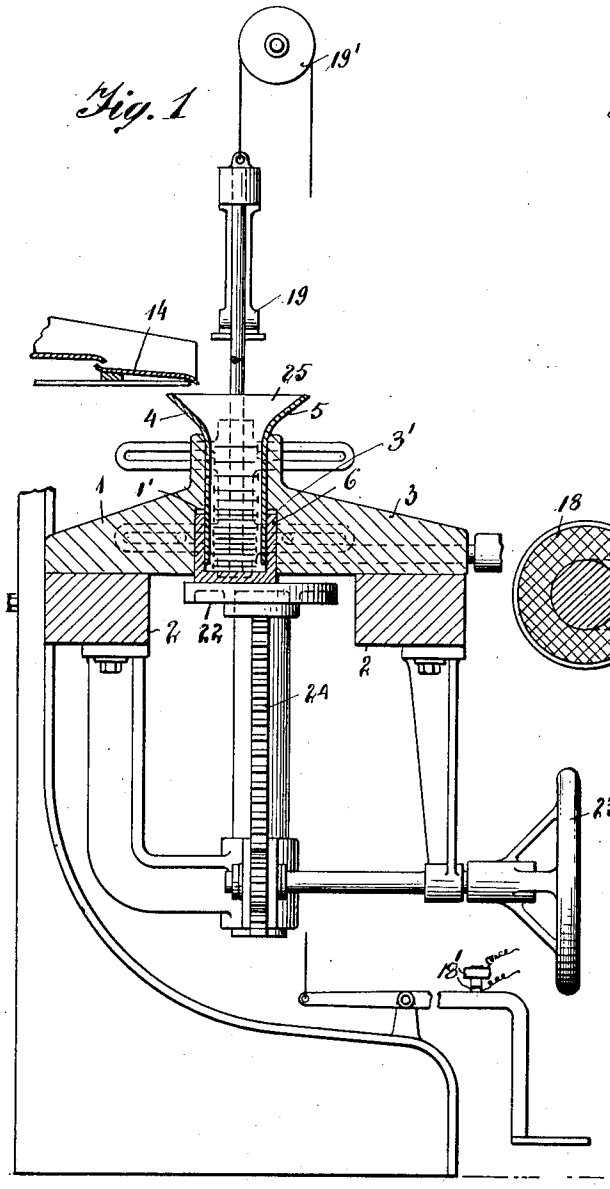
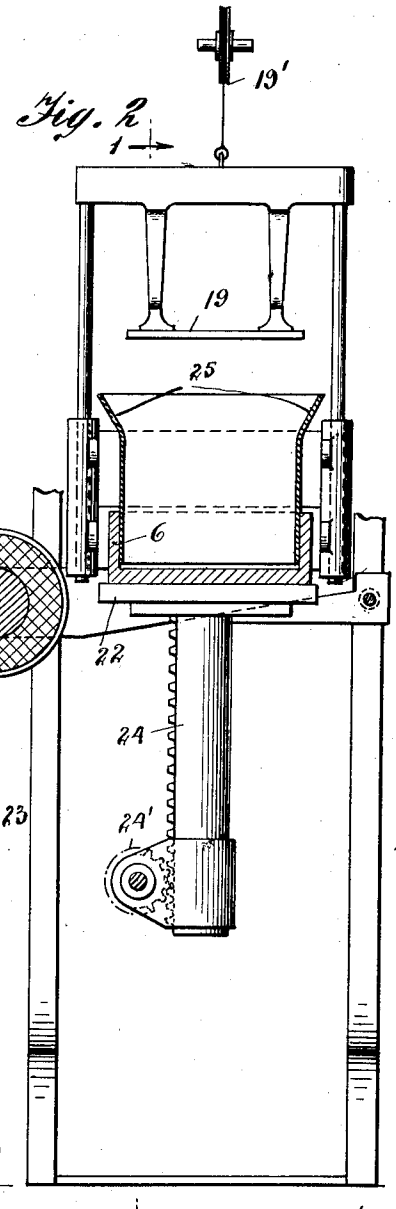


Fig. 2



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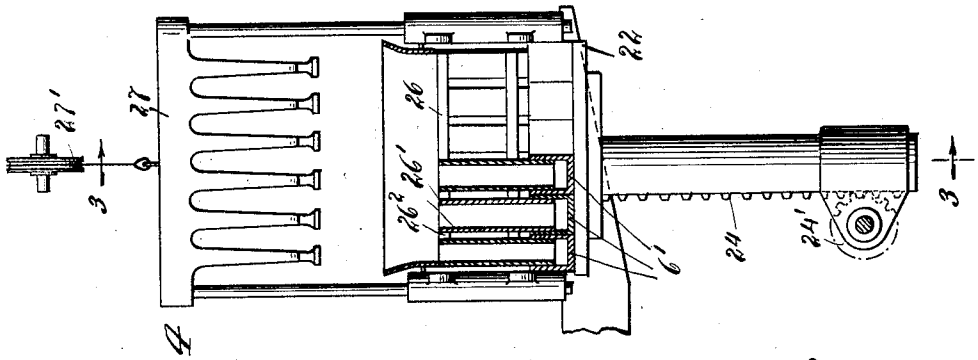


Fig. 4

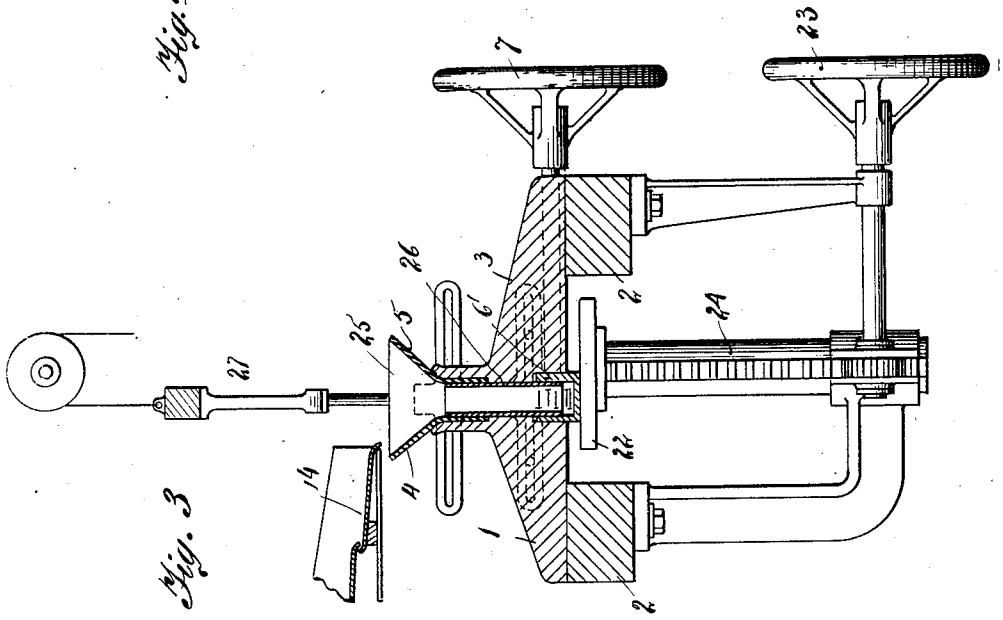


Fig. 3

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UNITED STATES PATENT OFFICE.

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MACHINE FOR FACILITATING PACKING OF MAGNETIC OBJECTS OF OBLONG SHAPE.

1,330,113. Specification of Letters Patent. Patented Feb. 10, 1920.

Application filed June 1, 1917. Serial No. 172,320.

To all whom it may concern:

Be it known that I, OTTO GAMPER, a citizen of the Republic of Switzerland, residing at Zurich, Switzerland, have invented certain new and useful Improvements in Machines for Facilitating Packing of Magnetic Objects of Oblong Shape, of which the following is a specification.

The present invention relates to the packing of oblong objects of magnetic material with the objects arranged in parallelism so as to utilize to the maximum extent all of the available space within the package or container.

Particularly my invention relates to electro magnetic packing machines of the type described and shown in my Patent #1,080,435 and Re-reissue #14290.

With the hitherto used machines of this kind, there are often the drawbacks that the removal of the objects from the magnetic field into which they have been previously compactly filled, is rendered very difficult or at least too inconvenient and that after transferring the objects into a container they lose their former compactness.

These drawbacks are especially then felt when, for instance, nails are packed into wooden boxes which open and close on the length side or when pine or needles are packed into boxes which are too small to at once receive all the pins accumulated on the bottom of the magnetic field.

The main object of my invention is to obviate these drawbacks.

To accomplish this object I provide a magnetic field which is open at its bottom and so arranged as to accommodate between its magnetic poles one or several containers, which may be movably supported and into which the magnetic objects can be packed direct and simultaneously in parallelism and compactly.

Another object of my invention is to provide a movable support for the container or containers, whereby the latter can be moved into or out of the magnetic field.

A further object is to provide means for dividing the magnetic field into separate compartments to correspond with the width of the containers used and whereby the magnetic objects dropped into the magnetic field will be separated into different tiers and be packed in parallelism in the separate containers.

A still further object of my invention is to provide a packing member or plunger which on the objects falling into the magnetic field and thence into the container or containers will be moved so as to compress the objects in the latter.

Other objects of my invention will appear from this detailed description thereof.

In the accompanying drawings in which similar reference numerals denote corresponding parts, Figure 1 is a vertical cross section on line 1—1 of Fig. 2; Fig. 2 is a front view thereof, partly in section and of which the front magnetic pole is omitted; Fig. 3 is a vertical section of a modified form of construction, and Fig. 4 a front view thereof similar to Fig. 2.

The machine as shown, includes a horse shoe magnet of which 1 and 3 are the magnetic poles. The pole 1 may be stationarily supported on the fixed support 2, while the other pole 3 is so supported thereon as to be capable of being moved by means of a screw bolt having a hand wheel 7 toward and away from the pole 1, in order to reduce or enlarge this space or groove between the two poles which constitutes the magnetic field. The space or groove is open to the outside or, as shown, at the bottom and serves to receive the container 6 into which the magnetic objects are to be packed. The container 6 is supported on a support 22 which is capable of being moved toward and away from the magnetic field, or as shown, vertically in order to lift the container into the magnetic field to receive the magnetic objects, or to lower it when filled. In the example shown, the support is provided with a vertically movable rack 24, which is suitably guided and with which meshes a gear 24′, to be rotated by means of a hand wheel 23.

Arranged above the magnetic poles is a movable tray 14 which may be of the same construction as that in my previous patents above referred to and from which the nails or other magnetic objects to be packed are delivered into the magnetic field.

Suitably fixed to the poles 1 and 3 are

plates 4 and 5 of non-magnetic material which project outwardly and laterally from the top of the poles and constitute together with guide plates 25 of similar material a chute or hopper which extends through the magnetic field almost to the bottom edges of the poles.

Arranged centrally above the magnetic field is a plunger or packing member 19 which is movably so suspended as to be capable of being lowered into the magnetic field, and the container therein in order to compress the magnetic objects in said container or to bring them into compact form therein. To this end the plunger 19 may be suspended by suitable means, as a cord over a roller 19′ and may be operated by means of a treadle or the like.

The electromagnet is energized in well known manner from an electric source 18, the circuit of which may be controlled through a switch 18′. The switch may be operated simultaneously with the plunger 19 or separately.

The nails or other magnetic objects to be packed in the container 6 are delivered from the tray or box 14 into the hopper 4, 5, 25 in which they under the influence of the magnetic lines of force created between the poles will be arranged parallel with their ends directed toward and attracted by the poles. When the space or groove between the poles after a short time has been filled with nails the electromagnet is disenergized, in consequence of which the nails gather closer to one another and sink to the bottom of the container 6. Simultaneously the plunger 19 is lowered still more compressing the nails in the container 6. In the example shown, the container assumed to be a wooden box is inserted into the space between the two poles so that the inner face of the bottom thereof is about flush with the lower edges of the poles 1 and 3. In this position it is held by the support 22. When the box is filled with nails the support by the manipulation of the hand wheel 23 is lowered to permit the removal of the packed box and its replacement by an empty one, which is then raised into the magnetic field.

In this manner it is possible to pack the objects directly into the boxes without the necessity of subsequent repacking, which might cause disarrangement of the objects.

If the box has been only partly filled the same can be lowered until the upper layer of the nails is even with the bottom edges of the poles. Then a fresh supply of nails is dropped into the field which are packed in the container in the same manner as before.

The parts of the poles 1 and 3 between which the box is to be mounted are cut away as at 1′, 3′, to a depth substantially equal to the thickness of the walls of the container 6, so that the hopper composed of non-magnetic plates 4, 5 and 25 will project into the box adjacently to the inner surfaces of its walls.

The lower edges of the hopper will prevent the nails from jumping out of the box when the electromagnet is suddenly restarted and before the box is entirely removed from within the field.

If it is desired to pack nails or smaller objects such as needles in several boxes simultaneously, the magnetic field may be arranged in several tiers or compartments, each one to receive a separate container.

Such form of construction is illustrated in Figs. 3 and 4. Here a member 26 of non-magnetic material is inserted into the space formed between the magnetic poles which is provided with a number of partition plates 26′, to extend at a right angle to the surfaces of the poles and spaced apart distances about equal to the lengths of the containers 6′. In the example shown, double plates 26′ are used for each tier, with a space 26^2 between two adjoining plates which is about equal to the thickness of two walls of adjoining containers. The member 26 is made of such a height as to extend throughout the entire height of the magnetic field to about the lower edges thereof, so that they will project into the containers 6′. The member 26 may be removably mounted between the magnetic poles to be exchangeable according to the sizes of the boxes or containers used.

Like in the first modification there is a plunger or packing member 27 suitably suspended from a roller 27′ or the like above the magnetic field, and which in the present case is composed of a number of members similar to the member 19, each one adapted on lowering the member 27 to enter a compartment or tier and a box 6′ to compress the objects therein.

The operation of this modified construction is similar to that of the first construction. The containers, which are assumed in the present example to be paper boxes to receive needles, pins or other small magnetic objects are supported on the vertically movable support 22. The needles or the like are delivered from the tray or box 14 into the different compartments or tiers formed by the member 26. In these compartments the objects become arranged in parallelism and on disenergizing the electro-magnet sink into the containers in which they are compressed by the multiple plunger 27.

It is obvious that my invention may be carried out in machines of different forms, without departing from the principle of my invention, and for this reason I do not wish to restrict myself to the specific construction and details shown and described, but wish

the two modifications to be considered within the scope of the appended claims, as examples of the embodiment of my invention.

What I claim and desire to secure by Letters Patent is:

1. A machine for packing magnetic objects, including means for forming a magnetic field sub-divided into compartments, each to receive a container and means for simultaneously removing said objects from the different compartments to the corresponding containers.

2. A machine for packing magnetic objects, including a magnetic field sub-divided into a plurality of compartments, each compartment receiving a container and a plurality of plunger members movable simultaneously through the several compartments to transfer said objects from the latter and to compress said objects into said containers.

3. In combination, two oppositely magnetized poles forming a magnetic field, non-magnetic partitions in said field sub-dividing the latter into a plurality of compartments in each of which a container is removably supported, and a series of plungers capable of moving simultaneously to transfer objects delivered into said compartments to corresponding containers.

4. In combination, two oppositely magnetized poles forming a magnetic field, non-magnetic partitions removably mounted in said field and sub-dividing the latter into a plurality of compartments in each of which is removably supported a container adapted to receive objects delivered into the corresponding compartment.

5. In combination, two oppositely magnetized poles forming a magnetic field capable of adjustment in width, a hopper of non-magnetic material extending throughout the height of said field, a member of non-magnetic material mounted in said hopper and sub-dividing it into a number of compartments, means for delivering objects into said compartments and a plunger composed of a number of members and capable of moving simultaneously through the different compartments, to transfer said objects from said compartments to and to compress the same in containers mounted in said compartments.

In testimony whereof, I affix my signature in presence of two witnesses.

OTTO GAMPER.

Witnesses:

MAX D. ORDMANN,

A. M. WATTENBERG.