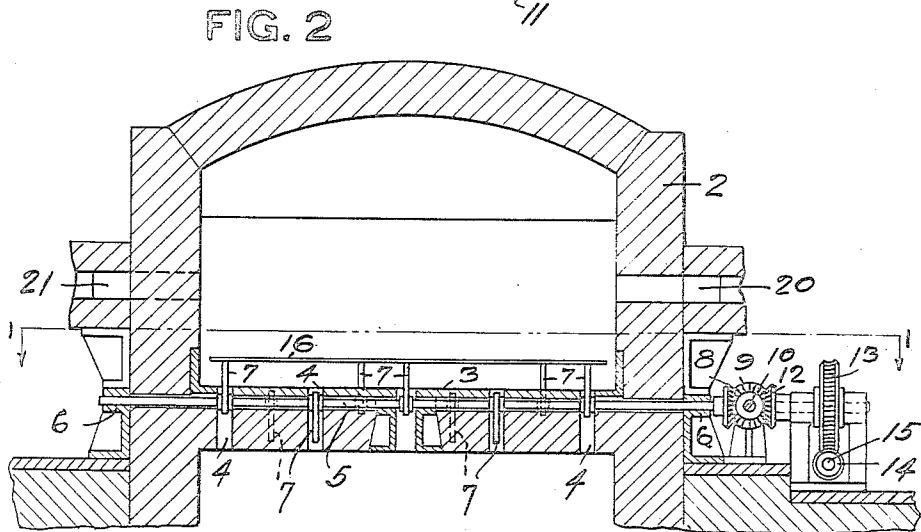
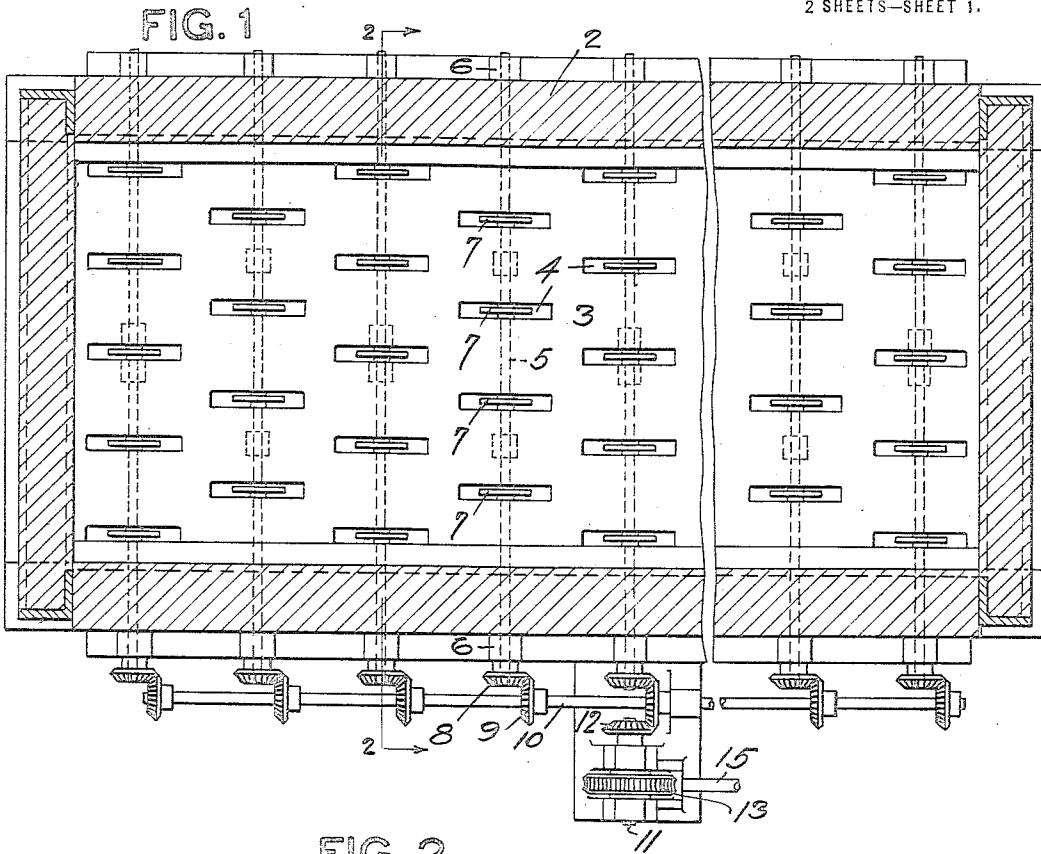


H. A. LEWIS,
 WORK HANDLING METHOD.
 APPLICATION FILED OCT. 23, 1919.

1,367,061.

Patented Feb. 1, 1921.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

FIG. 3

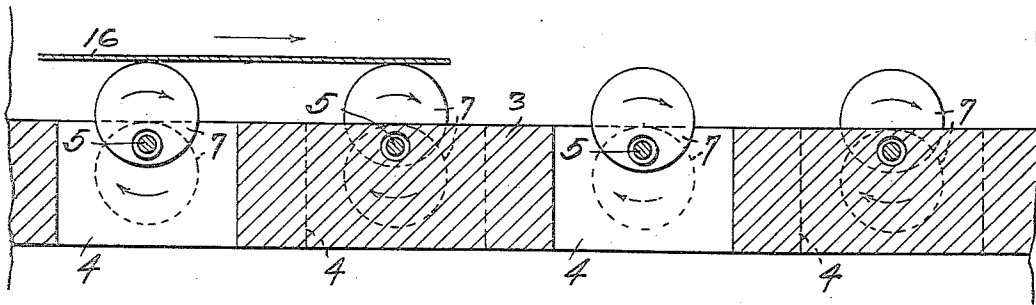


FIG. 4

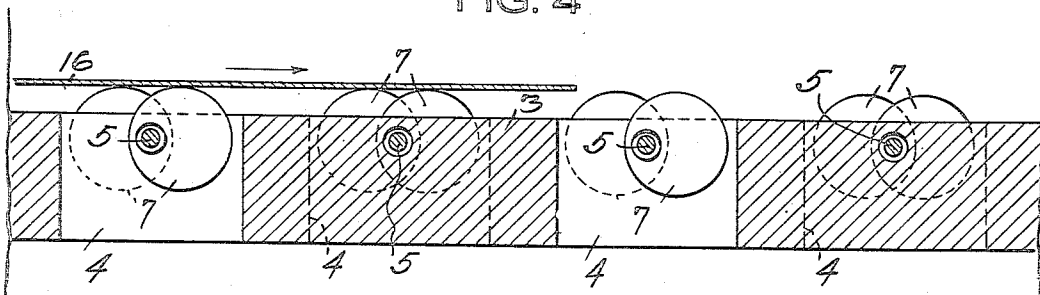


FIG. 5

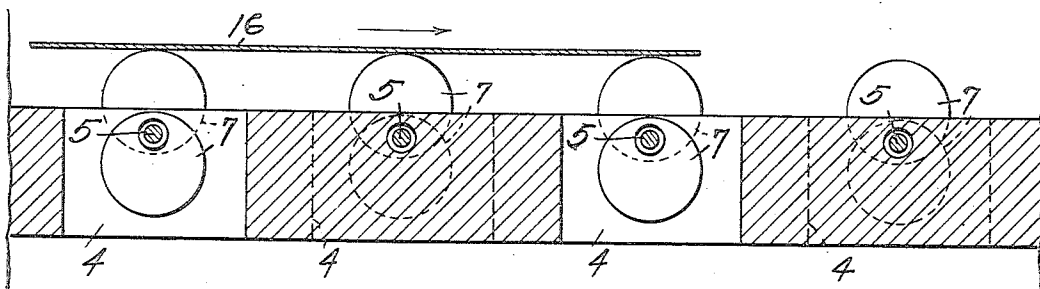
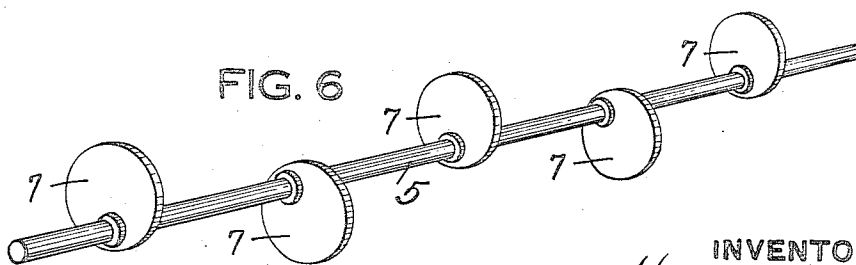


FIG. 6



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UNITED STATES PATENT OFFICE.

HARRY A. LEWIS, OF NORRISTOWN, PENNSYLVANIA.

WORK-HANDLING METHOD.

1,367,061.

Specification of Letters Patent.

Patented Feb. 1, 1921.

Application filed October 23, 1919. Serial No. 332,604.

To all whom it may concern:

Be it known that I, HARRY A. LEWIS, a citizen of the United States, and resident of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Work-Handling Methods; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to work-feeding methods, and has special reference to methods of feeding work where the work is carried continuously by a support through a treating chamber, such, for example, as an annealing or tempering furnace.

In the handling of metal, glass and other materials, there are many instances where it is desirable to change from time to time the points of contact between the feed mechanism and the work, and this is particularly true where the material is being subjected to heat treatment. For example, in the feeding of metal sheets through an annealing furnace, it is desirable to change the points of contact between the metal and the support in order to prevent the metal from receiving blue or black temper-lines or other undesirable markings.

The object of my invention is to provide an effective work-handling method in which the work is constantly supported and advanced, but in which the points of contact between the material and the work are constantly changed.

In the accompanying drawings, which illustrate an annealing furnace adapted to the practice of my method, Figure 1 is a plan view, with parts in section of the annealing furnace; Fig. 2 is a transverse sectional view of the same furnace; Fig. 3 is an enlarged longitudinal sectional view of a portion of the furnace floor, showing my improved mechanism with a sheet carried in an elevated position and supported by a set of disks; Fig. 4 is a like view showing the sheet farther advanced and in a lowered position, ready to be lifted by another set of disks; Fig. 5 is a like view showing the sheet supported by the first set of disks, and in a still farther advanced position; and Fig. 6 is a perspective view of a set of work-supporting disks, together with the shaft which carries them.

The mechanism shown in the drawings consists, in general, of a plurality of disks arranged in two or more sets, all of the

disks being eccentrically mounted upon parallel shafts in such a way that the sets of disks engage the work alternately, with a restricted and substantially straight-line contact whereby the work is moved forward and at the same time is raised and lowered, while the points of contact between the supporting disks and the work are constantly shifted throughout the conveying operation.

While I have illustrated my invention in connection with a furnace for annealing sheets of metal, its application is not limited in any way to such art, and I wish to extend its scope to any such use to which it may be found applicable.

On the drawing, the numeral 2 designates an annealing furnace which may be heated in any suitable manner and which is provided with a floor 3 having slots 4 formed therein, the slots 4 being arranged in rows and preferably staggered with relation to each other. Shafts 5 extend across the furnace below the floor 3, at intervals corresponding to the intervals between the rows of slots 4, the shafts being journaled in outside bearings 6. Secured to each of the shafts 5 are a series of disks 7 which are mounted eccentrically on the shaft, the disks on any one shaft being preferably set alternately at about 180° displacement with reference to each other, as best shown on Fig. 6. This angular arrangement may, however, be varied, as desired, and the disks may be arranged in three or more angularly displaced sets instead of in two such sets, as shown. The disks 7 register with the slots 4 and move up and down therein.

To the end of each shaft 5, in order to drive the shafts simultaneously, is secured a bevel pinion 8 which engages a corresponding bevel pinion 9 on a line shaft 10. The shaft 10 is driven by means of a stub shaft 11 which carries a bevel pinion 12 meshing with one of the pinions 9. A worm wheel 13 on the stub shaft 11 is driven by a worm 14 on a worm shaft 15 which may be connected to any suitable source of power. The furnace 2 may be heated in any suitable manner, as by the introduction of heated air or other gases in ways well known in the art, and I have indicated gas inlet and outlet ports 20 and 21 in the walls of the furnace by way of indicating diagrammatically such heating means.

When my invention is employed in connection with the feeding of metal sheets

through an annealing furnace, such as that which I have described above, the sheets are delivered in any suitable way upon the disks 7, and, as the disks rotate in the direction of the arrows, Figs. 3, 4 and 5, the sheet will be advanced from left to right. While it is being so advanced, the sheet will be raised and lowered by reason of the opposite and eccentric arrangement of the disks. In the position of the parts shown in Fig. 3, for example, a sheet 16 is shown supported in its highest position. As the sheet advances, it is gradually lowered until it reaches the position indicated in Fig. 4, where the sheet is shown at the moment when it leaves the disks which supported it in Fig. 3 and is about to be raised by another set of disks which lift it again to the position indicated in Fig. 5. In this manner, the sheet is raised and lowered and at the same time is advanced, the point of contact between the disks and the sheets being constantly shifted so that the metal of the disks is not in contact with the hot sheet for a sufficient length of time to absorb any great amount of heat and leave streaks or marks on the sheet in the form of blue or black temper lines. Furthermore, by staggering the several rows of disks, the line of supporting contact with the sheet is shifted both longitudinally and transversely of the sheets.

The rising and falling movement of the sheet, as it passes through the furnace, serves to break up the heat currents which are present in furnaces of this character, and thereby produces more uniform heating of the sheet.

The apparatus which I have shown and

described is intended to be merely illustrative of my invention, and it is to be understood that my work-handling method is of general application within the scope of the appended claims.

I claim as my invention:

1. The work-handling method that comprises supporting and advancing a body of material upon a plurality of supports having restricted and substantially straight-line contact with said material and moving each of the said supports alternately into and out of engagement with said material.

2. The work-handling method that comprises advancing a body of material through a heated chamber, while said material is supported upon a plurality of supports having rolling contact therewith and moving said supports into and out of engagement with said material, whereby said material is carried alternately by different sets of supports.

3. The work-handling method that comprises advancing a body of material through a heated chamber, while said material is supported upon a plurality of supports having rolling contact therewith, moving said supports into and out of engagement with said material, whereby said material is carried alternately by different sets of supports, and raising and lowering said material as it advances through said chamber.

In testimony whereof, I, the said HARRY A. LEWIS, have hereunto set my hand.

HARRY A. LEWIS.

Witnesses:

AARON S. SWARTZ, Jr.,
ELIZABETH R. FORREST.