

C. FIELD
METHOD OF COILING AND COATING FLAT METAL
STOCK AND THE ARTICLE FORMED THEREBY
Original Filed Sept. 18, 1946

FIG. 1.

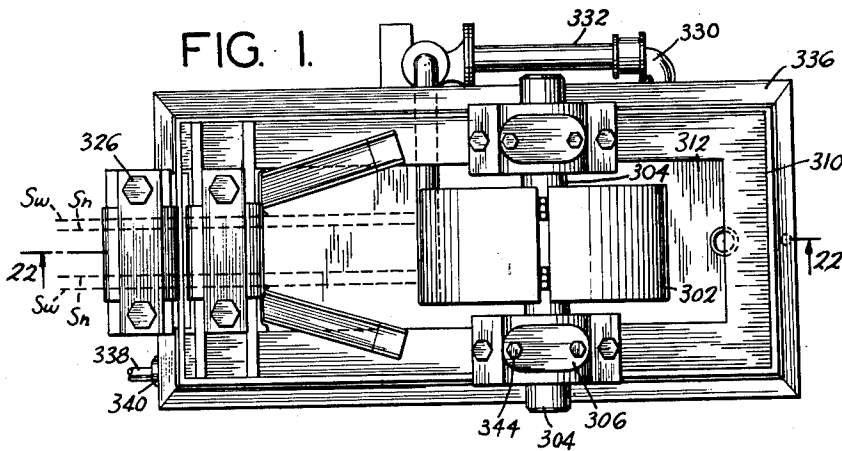


FIG. 2.

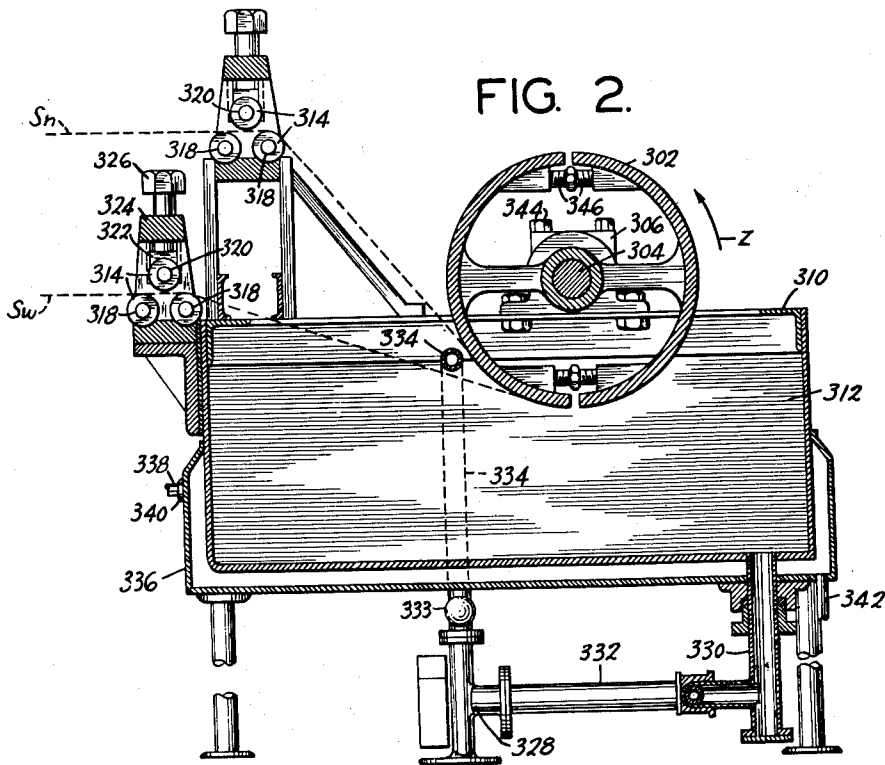
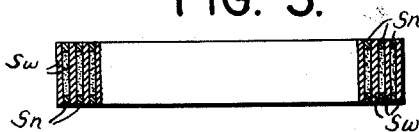


FIG. 3.



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UNITED STATES PATENT OFFICE

2,629,673

METHOD OF COILING AND COATING FLAT
METAL STOCK AND THE ARTICLE
FORMED THEREBY

Crosby Field, Brooklyn, N. Y.

Original application September 18, 1946, Serial
No. 697,750. Divided and this application Au-
gust 13, 1948, Serial No. 44,010

4 Claims. (Cl. 117-48)

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This invention relates to apparatus for making metal wool and similar products and is a division of my application Serial No. 697,750 filed September 18, 1946. It constitutes an important step forward over apparatuses and methods of the types illustrated by my Patents Nos. 1,608,478 and 1,608,481.

The usual method of making steel and similar metal wools today in the United States for commercial use comprises first the selection of a proper grade of steel; the grade is quite limited in its chemical and physical characteristics. The steel is specially "cropped," rolled into rods, and then drawn in several passes into wire of No. 12 gauge, that is, approximately .106 in. in diameter. In this fashion cold working produces a steel wire that can readily be shaved by serrated knives, producing a chip of the strength and resiliency required. The chips thus obtained are called steel wool.

For certain classes of trade it is desirable to produce a mixture of metal wool with a detergent compound such as a soap. The present practice is to manufacture the wool and compound separately and then to mix them. One of the objects of my invention is to provide a stock material consisting of metal strip and soap or other compound and a machine for operating upon this stock material to obtain directly the desired end product.

One of the further objects of my invention is to provide a method of and apparatus for the production of mixtures of metal wools and other plastic, semi-plastic, jelly-like, or solid compounds.

Additional objectives will be in part pointed out as the description proceeds and will in part become apparent therefrom. The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts and methods of operations as will be exemplified in the structures and sequences and series of steps to be hereinafter indicated and the scope of the application of which will be set forth in the claims.

In this specification and the accompanying drawings, I have shown and described a preferred embodiment of my invention and suggested various modifications thereof; but it is to be understood that these are not intended to be exhaustive nor limiting of the invention, but on the contrary are given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use

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so that they may modify and adapt it in various forms, each as may be best suited to the conditions of a particular use.

In the drawings:

Figure 1 is a plan view of a strip winding mechanism embodying the invention;

Figure 2 is a view taken along the line 22-22 of Figure 1; and

Figure 3 shows a cross section through a metal wool blank embodying the invention.

When it is desired to supply the machine disclosed and claimed in my earlier application Serial No. 697,750 with metal strip containing a detergent compound, I use the equipment shown in Figures 1 and 2. It comprises essentially a collapsible power driven drum 302 which, by its spokes, is carried upon a shaft 304 free to turn in bearings 306. Bearings 306 are attached to a channel frame 310 of a soap tank 312. To this drum is attached a wide strip of metal *Sw* and two narrow strips *Sn*. As drum 302 turns, these strips are tensioned and guided by two sets of rollers 314 so that the narrow strips wind up at or near the edges of the wide strip. Two of the rollers 314 are carried in rigid bearings 318 and a third is disposed approximately half way between the first two and above them in bearings 320 carried by an adjustable block 322 in a frame 324 under the influence of adjusting screws 326 so that the tension on the metal strip may be adjustably controlled. Wide strip *Sw* and narrow strips *Sn*, each one in special coils from the rolling mill, are fed from a reel or swift, as is well known in the art.

As drum 302 rotates, the soap or other solution in tank 312 is pumped by a power driven pump 328 from the bottom of the kettle through an outlet nipple 330, pipe 332 and a valve 333 into a nozzle pipe 334 which, because of orifices in it near its bottom, keeps the channel space between the two narrow strips and the wide strip filled with soap. The channel and soap filling are promptly wrapped about the strip already on drum 302 as the drum rotates in the direction of arrow Z.

Sufficient soap solution is pumped through nozzle pipe 332 so as to overflow and the overflow is collected in kettle 312 and recirculated. Fresh soap solution from time to time is added to kettle 312. In order to maintain the soap solution at the right temperature, I surround the kettle with an outside jacket 336. Steam or hot water may be fed into the jacket from a source not shown through a pipe 338 and a nozzle 340 and may be returned to a heater through a conden-

sate nozzle 342. In order to conserve heat I may surround my entire kettle or any part thereof with heat insulation.

The coil of compound and strip is then ready to be moved from tank 312. The coil is bound onto drum 302 by binding wires (not shown) as is well known in the art. Cap screws 344 are removed, permitting the removal of the caps of split bearings 306. Shaft 304 is then hoisted by a crane (not shown) and removed to a convenient place where the shaft is "up-ended" into a vertical position. Then drum 302 is sprung inwardly by turning right and left threaded stud 346 and the coil of strip slides off the drum. Stud 346 is then turned in the opposite direction so as to bring drum 302 back to its original shape and the drum is returned to its place over tank 312.

From the foregoing it will be observed that wool cutting apparatus and methods embodying my invention are well adapted to attain the ends and objects hereinbefore set forth and to be economically manufactured and employed, since the separate features are well suited to common production methods and are subject to a variety of modifications as may be desirable in adapting the invention to different applications.

As many possible embodiments may be made of the mechanical features of the above invention and as the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. An article of manufacture comprising a substantially flat-sided coil of metal having characteristics which make it suitable for conversion into metal wool; said stock comprising a metal strip of long and narrow substantially rectangular over-all transverse cross section, each loop of the coiled strip being spaced from the next loop of the strip by an intervening narrow spacing material, the long transverse dimension of said metal strip being several times as great as the long transverse dimension of said spacing material, and a soap compound of at least semi-solid consistency interposed between opposing faces of adjacent loops of strip.

2. An article of manufacturing comprising a double coil of metal stock having characteristics which make it suitable for conversion into metal

wool; said coil comprising a pair of metal strips, one strip being of several times the transverse width of the other, one strip overlying the other, whereby adjacent coils of one strip are separated by an intervening coil of the other strip, and a soap compound of at least semi-solid consistency interposed between opposing faces of adjacent coils of the wider strip.

3. In the art of manufacturing metal wool stock, that improvement which includes the steps of: simultaneously coiling a metal strip of long and narrow rectangular cross section with a spacing strip of much shorter cross section into a unitary coil with a corresponding side edge of each strip lying substantially in a plane, whereby loops of the metal strip are separated by loops of the spacing strip, and filling the spaces between adjacent loops of metal strip not occupied by spacing strip with a soap compound of not less than semi-solid consistency.

4. An article of manufacture comprising a substantially flat-sided coil of metal stock having characteristics which make it suitable for conversion into metal wool; said stock comprising a metal strip of long and narrow substantially rectangular over-all transverse cross section, each loop of the coiled strip being spaced from the next loop of the strip by an intervening narrow spacing material, the long transverse dimension of said metal strip being several times as great as the aggregate transverse dimensions of said spacing material, and a soap compound of at least semi-solid consistency interposed between opposing faces of adjacent loops of strip; said spacing material comprising a pair of narrow strips one coiled at one edge of the metal stock strip and the other coiled at the other edge of the metal stock strip whereby each flat side of the coil of stock is defined by substantially coplanar alternate edge portions of metal and narrow strips.

CROSBY FIELD.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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1,996,392	Torrence et al.	Apr. 2, 1935