

C. T. PRATT.
ARMORING DEVICE.
APPLICATION FILED DEC. 6, 1909.

Patented Oct. 29, 1912.

1,042,477.

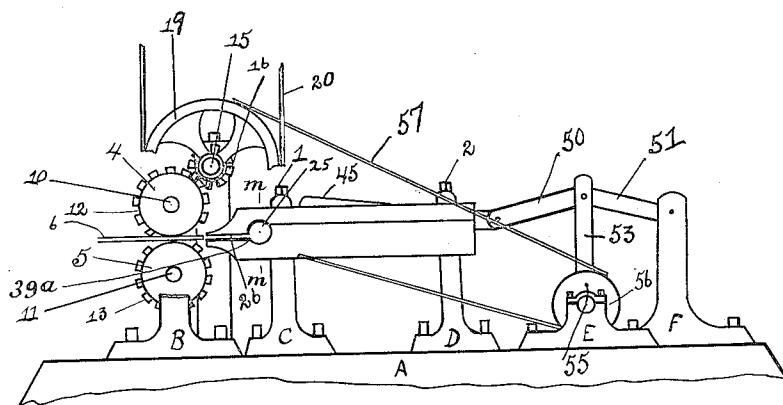


Fig 1

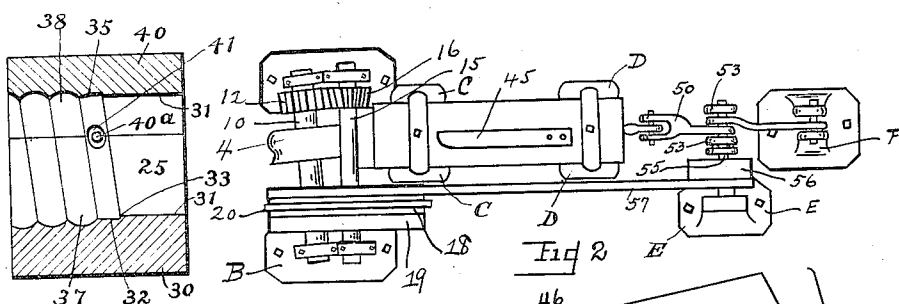


Fig 2

Fig. 5.

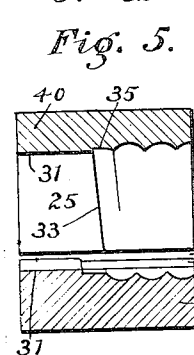


Fig. 6.

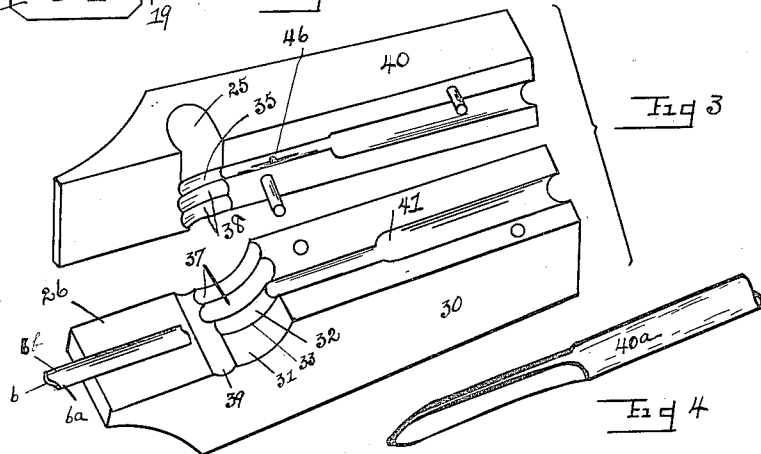


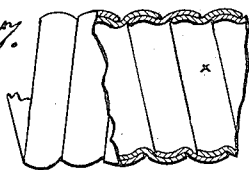
Fig 3

Fig 4

WITNESSES:

R. Wilder
E. F. De Giorgi

Fig. 7.



INVENTOR

CHARLES T PRATT

BY *Risley Howe*
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES T. PRATT, OF FRANKFORT, NEW YORK.

ARMORING DEVICE.

1,042,477.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed December 6, 1909. Serial No. 531,478.

To all whom it may concern:

Be it known that I, CHARLES T. PRATT, a citizen of the United States, residing at Frankfort, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Armoring Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to an improved armoring device, and I declare that the following is a full, clear, concise and exact description thereof, sufficient to enable one skilled in the art to make and use the same, reference being had to the accompanying drawings in which like reference characters refer to like parts throughout.

It will be apparent that I include in the term armoring machine a device whereby a coil of spirally wound metal or other protective material is formed about a mandrel to construct a hollow flexible tube or casing about a cable for protecting the same. Such tubes or armor are already known in the art and are sometimes formed of double strips formed in an S or C, or like formation whereby the strips are adapted to overlap each other. In some instances a flexible tube is formed or a cable is armored by the use of a single strip having a given formation in cross section which sometimes has a reversed curve. In all cases where a single strip of armor is used it is necessary that one edge shall be compressed or reduced in some manner so that as the subsequent turn overlaps, the diameter of the tube or armor will not become continually enlarged.

The machine which I here describe and illustrate is designed for use in forming a tube or armoring a cable with a single ribbon of metal or the like which is coiled upon itself spirally and one edge of which is reduced in the process of winding so that the superposed edge of the next turn can be formed over the under-turn and be no larger in diameter of the tube than the preceding overlapping coil. It will be observed that instead of rolling one edge to enlarge or stretch it whereby to permit it to overlap a preceding edge, my method and the mechanism I provide therefor contemplates the shrinking of the other edge.

In the drawings Figure 1 is a side view of a machine which embodies the invention in one form. Fig. 2 is a plan view of the machine. Fig. 3 shows the die open, so as to

show the interior of the two parts. Fig. 4 shows the reducing member. Fig. 5 is a vertical sectional view on the line *m-m* of Fig. 1 looking toward the right in that figure; while Fig. 6 is a like view looking in the other direction. Fig. 7 is a view of the finished product, partly in longitudinal section.

Referring to the drawings in detail A is a base or table having standards B, C, D, E and F. On the standards C and D are supported the die which will be more fully described below, it being held in place by set screws 1 and 2, the standards C and D which support it being formed to receive different dies according to the work to be done. On standard B are mounted two wheels 4 and 5, the periphery of which is formed, as shown in Fig. 2, to give to the ribbon 6 a curvature transverse thereof so that half of it has a longitudinal dip. These wheels or rollers 4 and 5 are mounted on shafts 10 and 11 which, by ordinary mechanical means, can be mounted to be adjusted more or less nearly together according to the thickness of the ribbon to be fed and likewise can be mounted to be readily removed, the adjustment of shafts 10 and 11 being such as to allow the insertion of different rollers. The shafts 10 and 11 carry intermeshing gear-wheels 12 and 13. The standard B has means for supporting the shaft 15 which carries a beveled gear-wheel 16 meshing with gear-wheel 12 whereby rotary motion is imparted to the gears and the forming wheels. While I speak of rollers 4 and 5 as forming wheels, they are also feeding wheels and force the ribbon into the die. On the shaft 15 is mounted power pulley 18, having idler 19 therewith, the power pulley being operated by belt 20.

The die heretofore referred to is shown as made of two parts and will be described with reference to the two parts. Taken as a whole, however, the die is formed with a transverse bore, shown at 25, opening into which is a feed-way 26 which carries the ribbon from the feed wheels which are mounted slightly oblique into the bore of the die. Referring particularly to part 30, which is one of the portions of the die, it will be seen that a portion of the wall of the bore and indicated by 31 is plane, and that a spiral groove 32 is formed therein, leaving a shoulder 33 against which the edge of ribbon 6 bears as it is forced into the

die and around the bore. The groove 32 in the member 30 is continued at 35 in member 40 which is the component part of the die. The faces of the groove 32 and 35 are smooth and the groove is of slightly smaller diameter than the other grooves since it is in the groove specified that the flat portion of the ribbon bears, the groove shown by 37 and 38 being slightly larger in diameter to allow for the curvature of the ribbon in cross-section as at 6^b which formation continues longitudinally of the ribbon on one side. The bore shown at 25 through the die is enlarged by the bore 39 cutting away the shoulder or edge at 39^a (Fig. 1) and allowing for free winding of the ribbon and the spirals of the finished tube or armor to pass out of the die. In other words, the die being regarded as a single structure has a transverse bore 25 with a lead or guide 26 thereinto for the ribbon 6. The bore is formed with spiral grooves to coil the ribbon which is forced into the grooves, the series of grooves having a shoulder at the former end of the series to guide the ribbon by contact of the edge therewith.

It being necessary that the edge of the ribbon, which in this case is the one next the shoulder, should be contracted, I provide a mechanism for that purpose. The form here shown is a device for striking frequently intermittent blows against the ribbon. The hammer or bar is shown at 40^a which reciprocates in groove 41 cut lengthwise of the die and opening into the transverse bore to strike the ribbon as at point *x* shown in Fig 7. The hammer or striker is suitably made and formed for the purpose, its striking tip being conical and the striking surface being flat of circular outline, although this last feature I do not consider essential. The groove 41 is slightly larger vertically toward the inner end than the hammer or bar, so that as the coil is being formed the striking end of the bar can move slightly upward with the coil when the pressure is being applied. These blows are frequent enough to give substantially a continuous hammering effect on the edge of the ribbon. A spring 45 is mounted on the die and passes downward into the die through opening 46, the function of which is to press the hammer downward between the several blows. Various means may be employed to reciprocate this hammer or bar, but I show one as consisting of toggles made up of links 50 and 51, one of them being pivoted to the head of the hammer and the other to the fixed standard F. The adjacent ends are pivotally connected and are connected

with pitman-rod 53, the other end of which bears on a pin 55 in wheel 56 which is rotated by belt 57 and is adapted to a suitable rate of revolution to reciprocate the hammer with necessary frequency. It is evident that a plurality of these hammers or reducers may be used as desired, being positioned to beat and reduce in diameter one edge of the coil at different points and from different directions or angles, so as to insure the proper result by a plurality of successive pressures or blows at given points on the coil, practically equalling one continuous pressure if desired. It is thought to be within the skill of the mechanic, with the showing made, to construct such a variety of machine.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a device of the character described, the combination with a die having spiral grooves therein of a hammer reciprocally mounted and playing against the coils fed into the said die, substantially as described.

2. In a machine of the character described, the combination with a die for winding a metallic ribbon in spiral form with edges overlapping and of a given diameter, of a reciprocating hammer actuated by mechanism whereby to compress in diameter one edge of the coil of said ribbon, while being wound, substantially as described.

3. In a device of the character described, the combination in a die having a spiral groove for the winding of a ribbon, of a hammer mounted to reciprocate against the ribbon as it is being wound and with a vertical play for the striking head of the hammer, and means for restoring the head to its normal position, substantially as described.

4. In a device of the character described, the combination in a die having a spiral groove for the coiling of the ribbon with overlapping edges, of a hammer mounted to reciprocate against the ribbon while being wound, the die being cut to allow vertical play of the striking head of the hammer, substantially as described.

5. In a device of the character described, a die cut out interiorly in spiral form whereby to guide a ribbon end through said die, and reciprocating mechanism whereby to reduce in diameter one edge of said ribbon, substantially as described.

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

CHARLES T. PRATT.

Witnesses:

ELEANOR T. DA GIORGI,
T. L. WILDER.