F. J. MacDONALD.

MACHINE FOR MANUFACTURING CORD BINDING.

APPLICATION FILED JULY 16, 1918.

1,369,826.

Patented Mar. 1, 1921.

2 SHEETS—SHEET 1.

Fig. 1

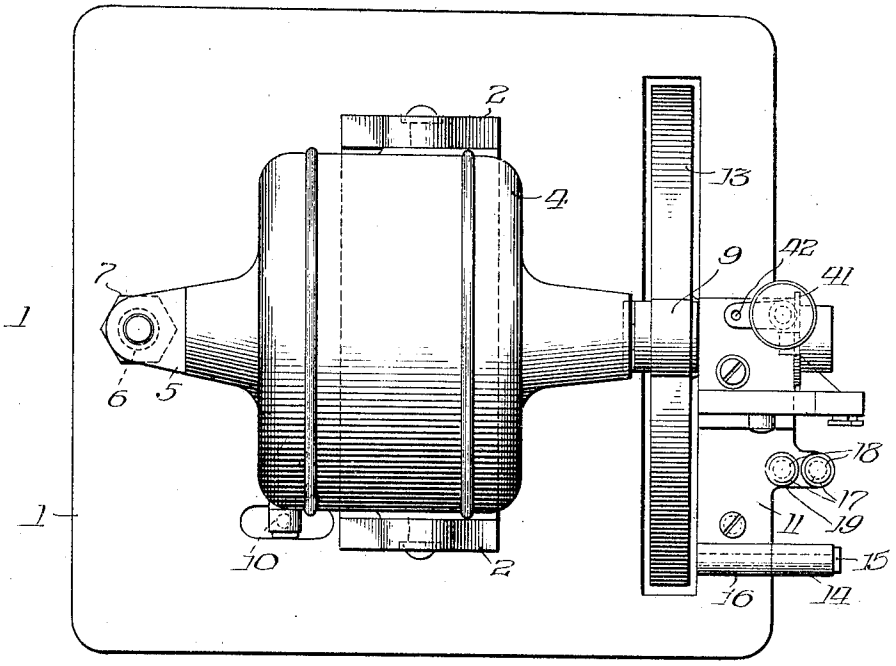
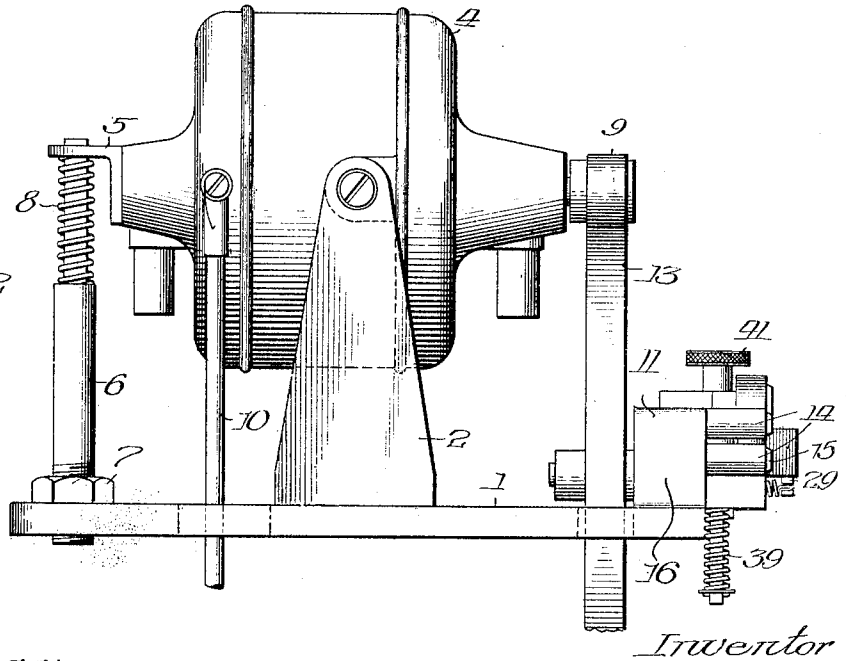


Fig. 2



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Fig. 3

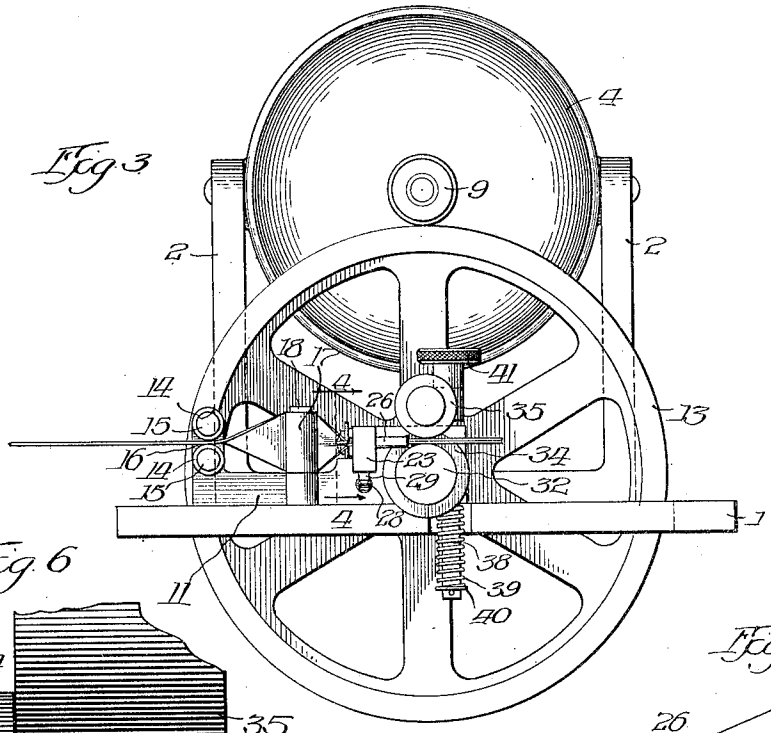


Fig. 6

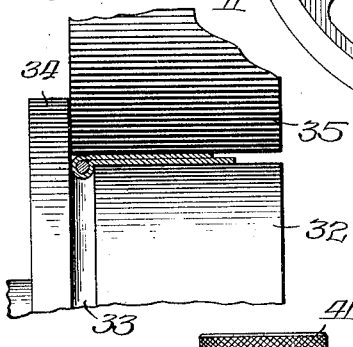


Fig. 5

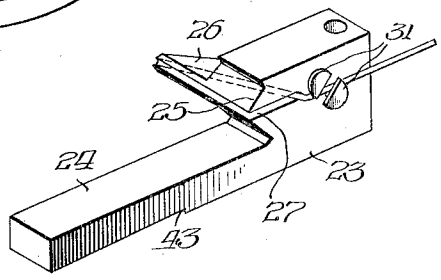


Fig. 4

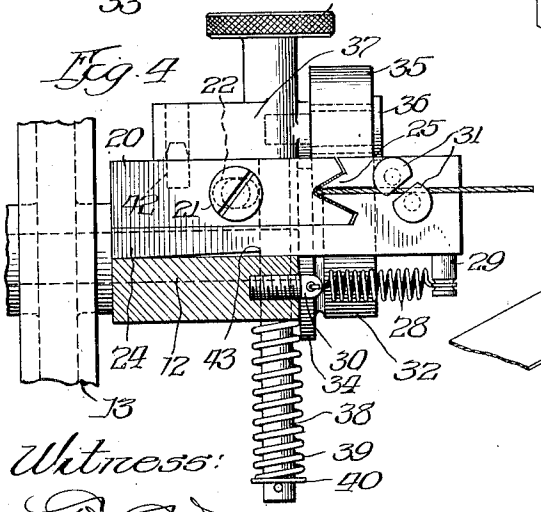
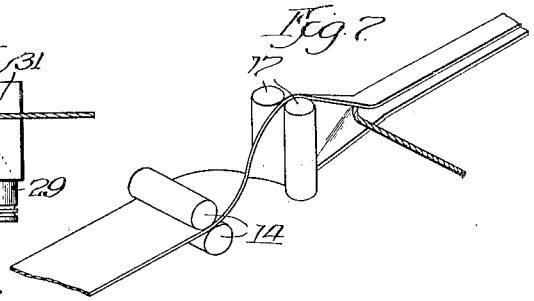


Fig. 7



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MANUFACTURING CORD BINDING.

1,369,826. Specification of Letters Patent. Patented Mar. 1, 1921.

Application filed July 16, 1918. Serial No. 245,256.

To all whom it may concern:

Be it known that I, FRANK J. MACDONALD, a citizen of the United States, residing at Akron, county of Summit, State of Ohio, have invented certain new and useful Improvements in Machines for Manufacturing Cord Binding, of which the following is a specification.

The machine forming the subject matter of this application is designed to form what is known as "cord binding" by which is meant a strip of folded rubberized fabric in the crease of which is inserted a cord, the resultant product being used to go around the tops of rubber boots or shoes as a finishing strip. The machine shown herein is designed to quickly and economically manufacture this article.

In the drawings accompanying this application is shown one embodiment of the invention, but it is understood that changes may be made in the machine without departing from the essential features of the invention.

Figure 1 is a plan view of the machine.

Fig. 2 is a side elevation.

Fig. 3 is a front elevation.

Fig. 4 is a cross-section on the line 4—4 of Fig. 3 enlarged.

Fig. 5 is a perspective detail of the folders and cord inserter.

Fig. 6 is a detail of the binding passing between the pressure rollers.

Fig. 7 is a perspective showing diagrammatically the manner in which the fabric is folded.

The apparatus is supported on a base 1 from which rises a U-shaped bracket 2 in the upper extremities of which is pivoted a motor 4. The rear end of the motor carries a bracket 5 which passes over a post 6 adjustably mounted in the base plate by a nut 7 the upper end carrying a coil spring 8 which contacts the bracket 5 and serves to rock the motor on its pivot with the other end of the armature shaft downward. The shaft carries at its outer end a pulley 9 driving the apparatus. A link 10 is attached to the motor and to a treadle conveniently located, by which the motor may be rocked to raise the drive pulley whenever desired.

On the forward edge of the base plate is mounted a bearing plate 11 which carries the folding and cord inserting instrumentalities. On one side of the bearing plate is mounted a shaft 12 the rear end of which carries a friction wheel 13 which is contacted and driven by the pulley 9.

The frictioned strip of fabric or tape in flat or folded condition comes from any suitable source of supply and first passes through a pair of horizontal rollers 14 mounted on pins 15 carried by a lug 16 formed at one end of the bearing plate 11. It then passes through two vertical rollers 17 mounted on pins 18 carried in a lug 19 formed on the bearing plate, being given a half turn in passing. It has been a difficult matter heretofore to guide a thin easily flexible strip of material accurately as is necessary in a machine for manufacturing this article, but I have found that with this arrangement of the rollers 14 and 17 it is possible to maintain the center of the fabric in a straight line through the machine so that the fold will be accurately made at the desired point.

Adjustably mounted on the bearing plate is the stationary folder 20, the forward end of which is formed with a V-shaped groove into which the tape passes from the pins 17. A set screw 21 passing through a slot 22 and into the bearing plate furnishes a means of adjustment for the folders. A movable folder 23 having a long tongue 24 received between the underside of the folder 20 and the bearing plate carries a complementary V-shaped projection 25 for the recess on the stationary folder. The projection 25 is carried back from the outgoing side of the movable folding member to form a nose 26 which tapers to a point. The tape in passing between the two V-shaped folders is folded over, the position of the folder with respect to the rollers 17 being such that the crease is not in the middle of the tape but one edge slightly overlaps the other.

To insert the cord into the fold of the tape a slot 27 is formed in the projection 25 which runs out at the point of the part 26. A pair of tension and guiding pins 31 are placed in the front of the folder 23, the cord passing between these pins and into the slot,

being accurately placed in the bottom of the crease by the nose 26. The method of folding and cord inserting is illustrated in Fig. 7. The movable folder is pulled in toward its companion folder by a light spring 28 secured at one end to a pin 29 in the folder and at the other end to a pin 30 in the bearing plate.

Integrally formed with the forward end of the shaft 12 is the lower roll of the pair which serves to roll down smoothly and firmly the folded fabric carrying the cord. This roll is shown at 32 and is provided with a cylindrical surface at the rear of which is a groove 33 adapted to receive the cord and at the rear of the groove is a flange 34. Above the roll 32 is mounted a second roll 35 which is carried on a pin 36 mounted in a holder 37, the lower side of which is formed with a pin 38 extending through the bearing plate and carrying a spring 39 confined by a washer 40. On the upper end of the holder is formed a knob 41, the holder being movable and guided by a pin 42 in the bearing plate.

The operation will be readily understood. It being desired to thread the machine the leading end of the cord is placed in the slot 27 and the leading end of the tape through the rollers 14 and 17 between the folders, and between the rollers 32 and 35. To permit the threading of the machine, the movable guide 23 is withdrawn and may be held in outward position by a notch 43 formed on its underside, the notch contacting the forward edge of the bearing plate. When the motor is started in operation, the tape and string are drawn through the folder and rollers 32 and 35 and firmly and smoothly creased as shown in Fig. 6.

Although the machine has been described in some detail, it is obvious that modifications may be made in the design or construction of its parts without changing its method of operation or departing from the scope of the invention as set forth in the appended claims.

I claim:

1. In a machine of the character set forth, the combination of fabric guide rollers, means for creasing and folding the fabric longitudinally, and cord feeding means adjacent said folding means adapted to feed cord into the bottom of the crease in the fabric.

2. In a machine of the character set forth, the combination of fabric guide rollers, means for creasing and folding the fabric longitudinally, cord feeding means at the folding means adapted to feed cord into the bottom of the crease in the fabric, and rollers for smoothing and pressing the fabric together.

3. In a machine for making "cord binding" the combination of complementary folders adapted to crease and fold the fabric and a device for inserting the cord into the fold of the fabric while the fold is being formed.

4. In a machine for making "cord binding" the combination of complementary folders adapted to crease and fold the fabric, a device for inserting the cord into the fold of the fabric while it is being formed and a roller for smoothing and pressing the fabric together.

5. In a machine for making "cord binding" the combination of complementary V-shaped folders adapted to crease and fold the fabric and a cord guiding formation on one said folder.

6. In a machine for making "cord binding" the combination of a folding element provided with a recess, a complementary folding element carrying a projection, the second folding element being provided with means for leading a cord into the lowermost part of the crease.

7. In a machine for making "cord binding" the combination of a folding element provided with a recess, a complementary folding element adapted to be received in the recess and provided with a slot terminating at the innermost part of the fold.

8. In a machine for making "cord binding" the combination of a folding element provided with a V-shaped recess, a complementary folding element adapted to be received in the recess and provided with a cord guiding slot terminating at the most advanced point of said complementary folding element, guide rollers for the fabric at the leading-in side of said folding elements and smoothing and pressing rollers at the other side of said elements.

9. In a machine for making "cord binding" the combination of a folding element provided with a V-shaped recess, a complementary folding element adapted to be received in the recess, means for drawing the two elements together, the inner one of the folding elements being provided with a cord guiding slot terminating at the base of the said folding element, guide rollers for the fabric in flat condition at the leading-in side of the folders, and pressure rollers at the other side thereof.

10. In a machine for the purpose set forth, a pair of rollers, a second pair of rollers at an angle thereto and a folding element to which the strip passes from the rollers.

11. In a machine for the purposes set forth, a pair of rollers, a second pair of rollers at an angle of 90° thereto, and a folding element adjacent the second pair whereby the strip may be accurately folded in a desired straight line.

12. In a machine for making "cord bind-

ing" the combination of a pair of rollers, a second pair of rollers at an angle thereto, a folding element adjacent the second pair, and means for inserting a cord into the fold of the fabric.

13. In a machine for the purposes set forth, a pair of rollers, a second pair of rollers at an angle of 90° thereto, means for folding a strip of fabric as it leaves the second pair of rollers, said means comprising a V-shaped projection, and a cord guiding and inserting formation on said projection.

FRANK J. MacDONALD.