No. 842,862. PATENTED FEB. 5, 1907.

C. L. CRANE.

CORE FOR PAPER AND FABRIC ROLLS.

APPLICATION FILED NOV. 23, 1906.

Fig. 1.

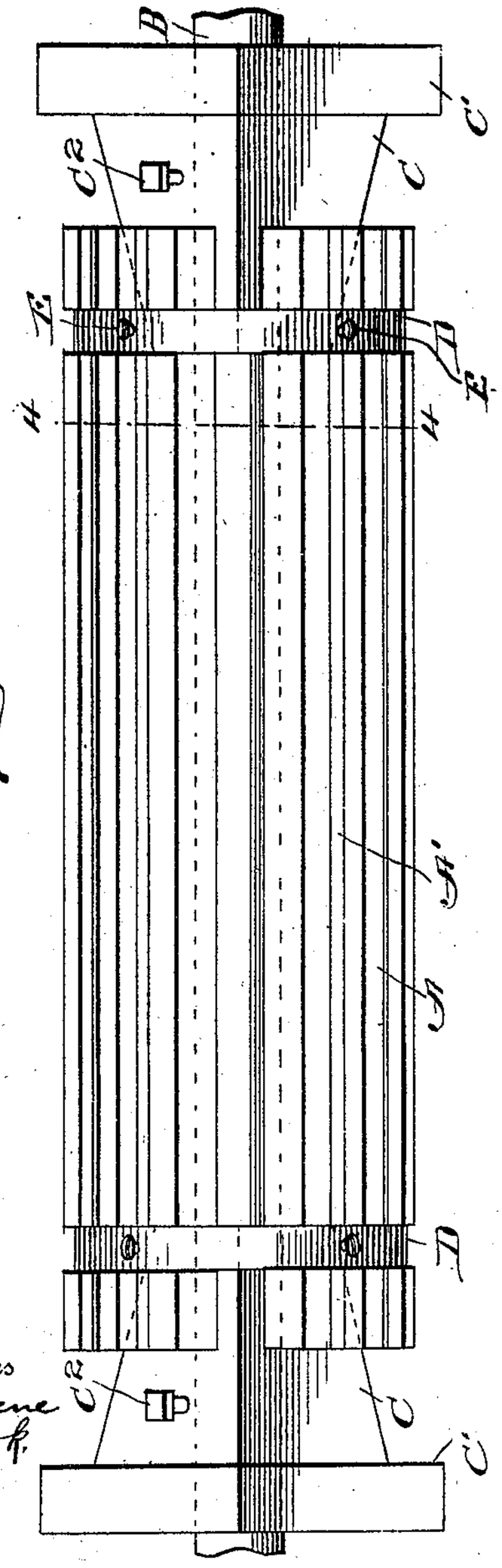


Fig. 2.

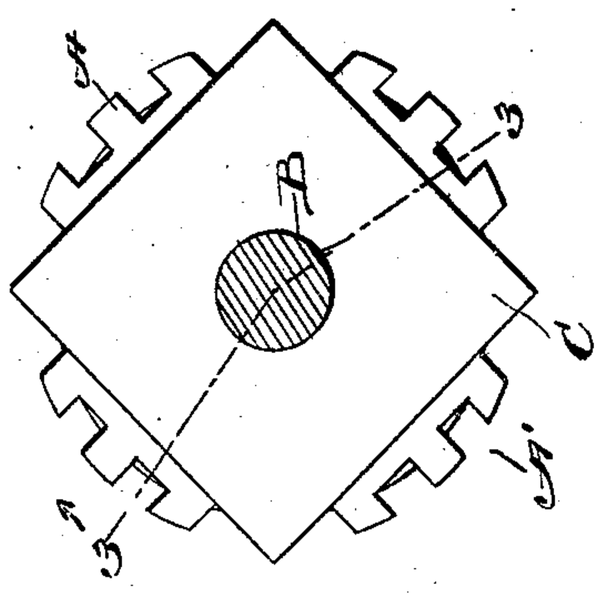


Fig. 3.

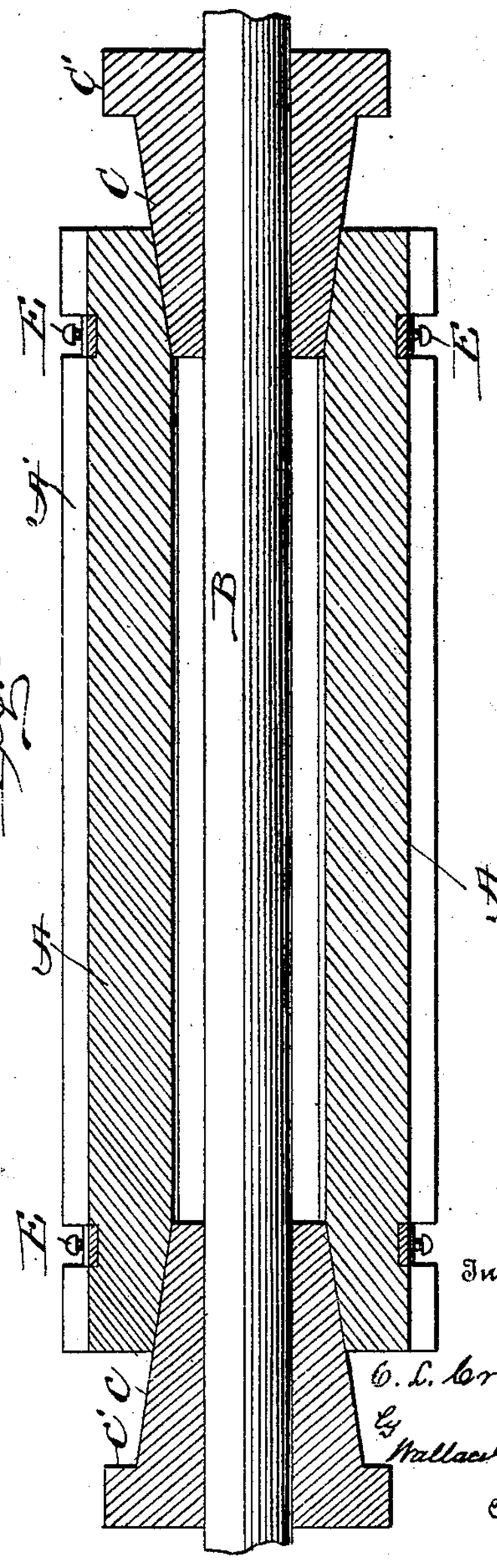
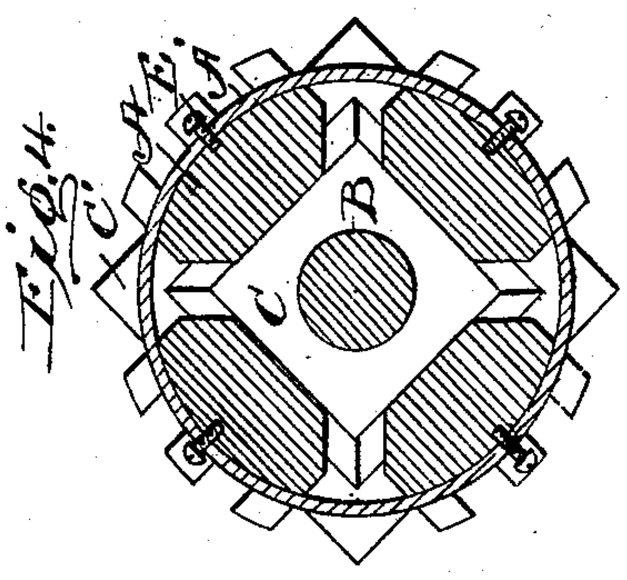


Fig. 4.



Witnesses
R. C. Greene
P. D. Cook.

Inventor
C. L. Crane.
by Wallace Greene,
Attorney

Be it known that I, CHARLES L. CRANE, a citizen of the United States, residing at Willimantic, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Cores for Paper and Fabric Rolls, of which the following is a specification.

My invention relates to expansible cores for rolls of paper, fabric, and the like; and its objects are to produce a device that shall be simple and inexpensive and that may be expanded and released almost instantly without the use of any special appliances. Many devices for the same general purpose have been produced; but so far as I am aware they are not used generally because they are neither simple nor quickly operated.

In the accompanying drawings, Figure 1 is a side view of the device clamped upon a shaft. Fig. 2 is an end view of the same device. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a section on the line 4 4 of Fig. 1.

The body of the core is cylindrical in form and made up of slightly-separated bars A, (shown in this instance as four in number,) each having a plane inner surface intended to lie at some distance from and parallel to the axis of a shaft B, upon which the core is to be detachably fixed, the bars symmetrically arranged about the shaft, each occupying the greater portion of a quadrant. Each bar has longitudinal grooves A in its outer cylindrical surface and is cut away internally at each end to receive pyramidal wedges C, slipped upon the shaft, inserted in each end of the core, provided with projections or shoulders C′ at some distance from the ends of the core, and at will locked to the shaft to prevent either sliding or relative rotation by any suitable devices—for example, set-screws C^2. To limit the outward movement of the bars A under the action of the wedges and also to hold the bars in proper relative position and always in position for the insertion of the wedges, the cylindrical body formed by the bars is circumferentially grooved quite deeply near its ends to receive rings D, preferably of metal, the thickness of which is much less than the depth of the grooves, in which the rings move freely. Each bar is secured to each ring by devices which allow the ring to move in or out in the groove, but prevent its sliding circumferentially therein, or which conversely allow the bars to move radially the ring, but not to slide around the ring and vary their distance from each other. For illustration, I have shown such devices as consisting of screws E, each passing loosely through a hole in the ring and engaging the block beneath, but not screwed in far enough to bind the ring and prevent the block and screw from moving radially through a distance equal to the difference between the length of the free portion of the shank of the screw and the thickness of the ring. The screw-head is always within the elements of the external surface of the core, and thus the ring is always kept within those elements.

In using the apparatus one of the cores or pyramidal wedges is fixed upon the shaft, the core is put approximately in place, the remaining wedge is slid into position and forced inward—for example, by a blow of a wrench—and the set-screw is firmly seated, thus locking the whole device securely and rigidly to the shaft. When the material has been wound upon the core, the latter is quickly released and allowed to collapse to the desired extent by simply loosening one set-screw and giving a blow upon the projection or shoulder C′. In winding paper or fabric upon a core the first turns are drawn taut and there is little danger of the slipping of the roll, whatever the form of the core. When, however, the roll is placed again upon a core for unwinding, it is not easy to prevent slipping as the goods are unwound if the core be of ordinary form. My core eliminates that evil, for the longitudinal grooves and spaces between the bars make the core practically polygonal, and the wedges fitting the long bevels at the ends of the bars are readily made to force the bars outward with sufficient force to securely engage the ribs with the inner surface of the roll by sinking slightly into the same or making it again slightly polygonal rather than by purely frictional engagement.

Obviously the number of the bars, their internal form, their material, the one-piece character of the wedges, and the means for insuring their rotation with the shaft, as well as other details of construction, are not invariable.

What I claim is—

1. In a core for paper and fabric rolls, the combination with a hollow, cylinder-like body having at all times in its outer surface, longitudinally-extending channels across

No. 842,863. PATENTED FEB. 5, 1907.

C. W. CURRIER & J. LEITSCHUH.

COLLAR SHAPING MACHINE.

APPLICATION FILED JULY 7, 1904.

5 SHEETS—SHEET 3.

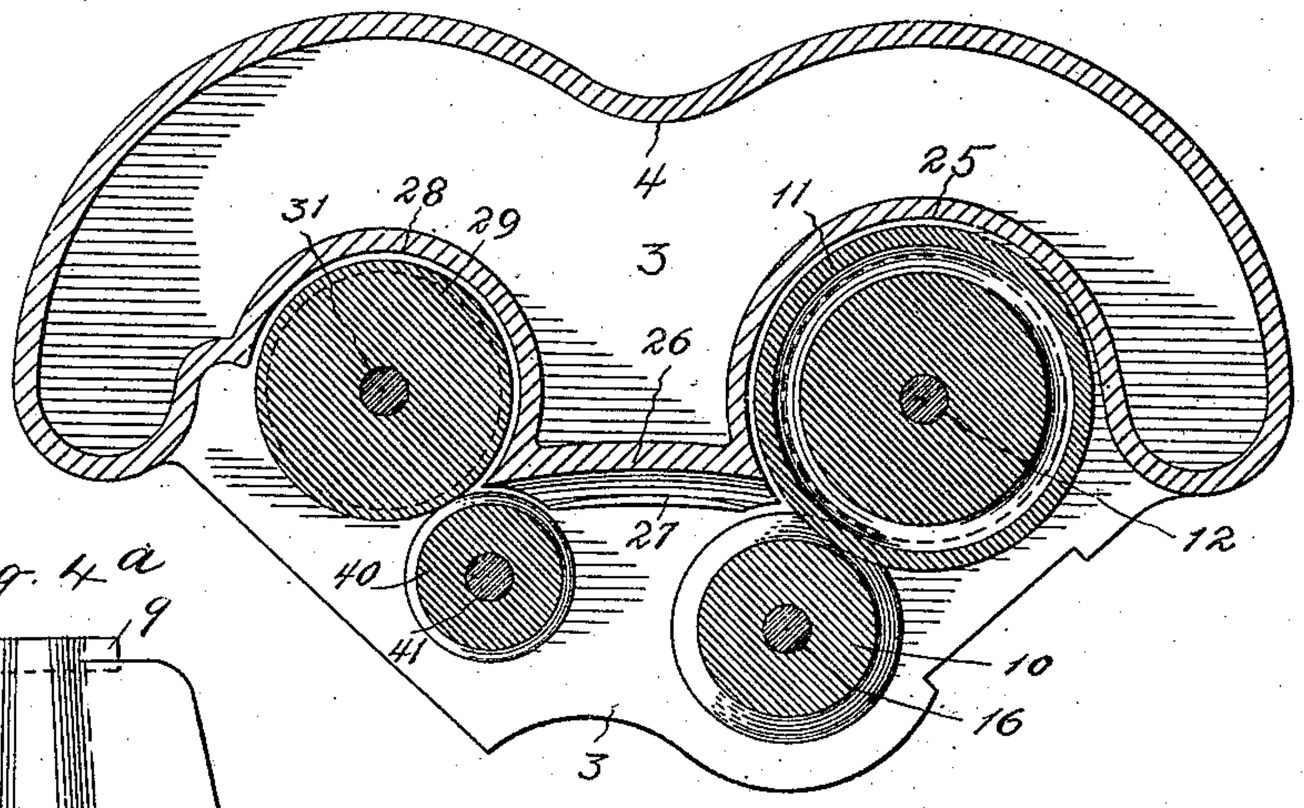
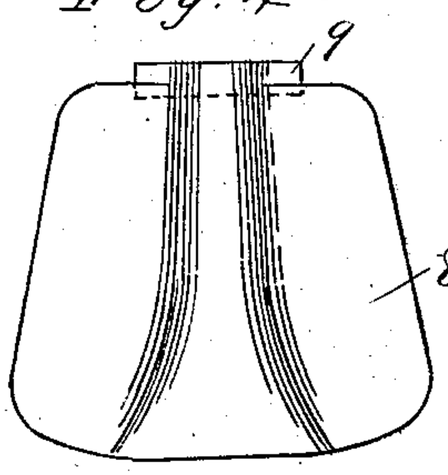


Fig. 3

Fig. 4a



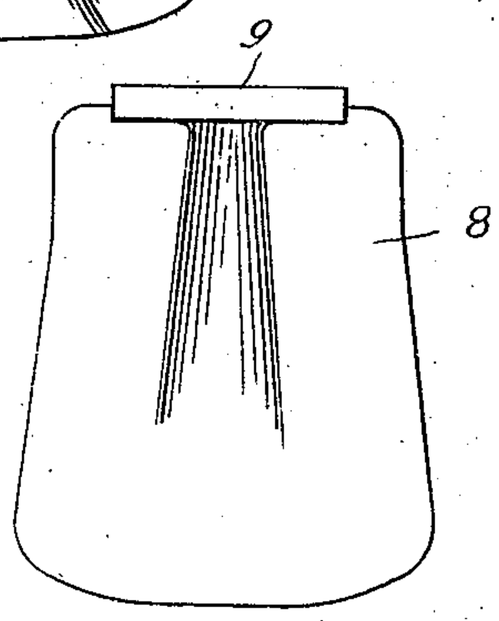


Fig. 4

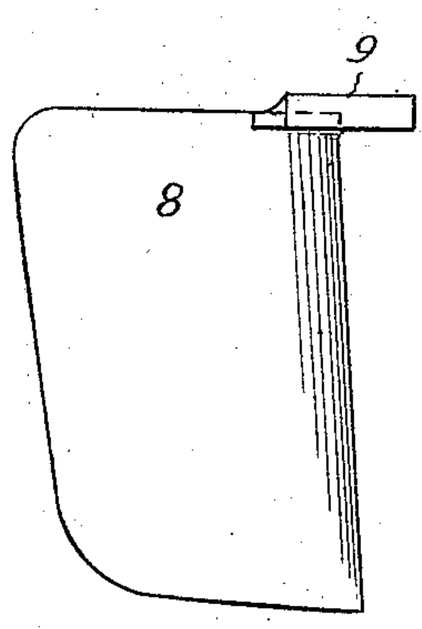


Fig. 5

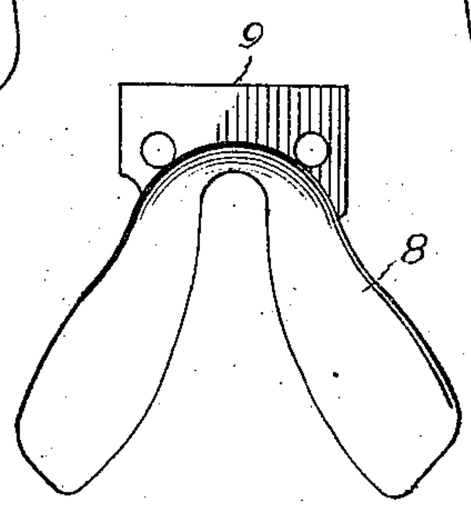


Fig. 6.

WITNESSES:

Harry Greenwood.

W. B. Ashley

INVENTORS

Charles W. Currier

Joseph Leitschuh

BY

Shepherd & Parker

ATTORNEYS

No. 842,863. PATENTED FEB. 5, 1907.

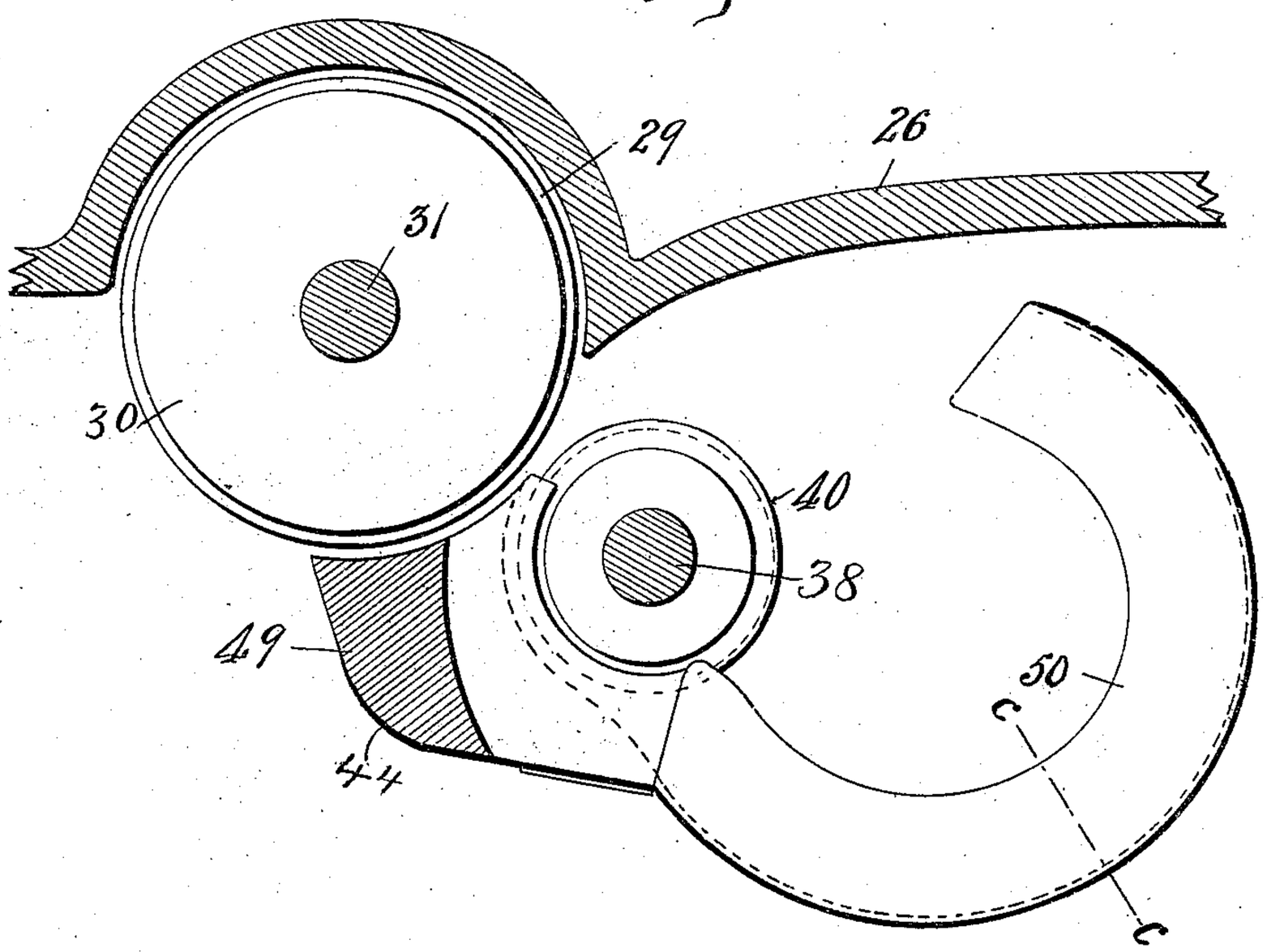
C. W. CURRIER & J. LEITSCHUH.

COLLAR SHAPING MACHINE.

APPLICATION FILED JULY 7, 1904.

5 SHEETS—SHEET 4.

Fig. 7.



Witnesses
Chas. A. Davies.
L. Morrill

Inventor
Charles W. Currier.
Joseph Leitschuh.
by Shepherd & Parker
Attorneys

No. 842,863. PATENTED FEB. 5, 1907.

C. W. CURRIER & J. LEITSCHUH.

COLLAR SHAPING MACHINE.

APPLICATION FILED JULY 7, 1904.

5 SHEETS—SHEET 5.

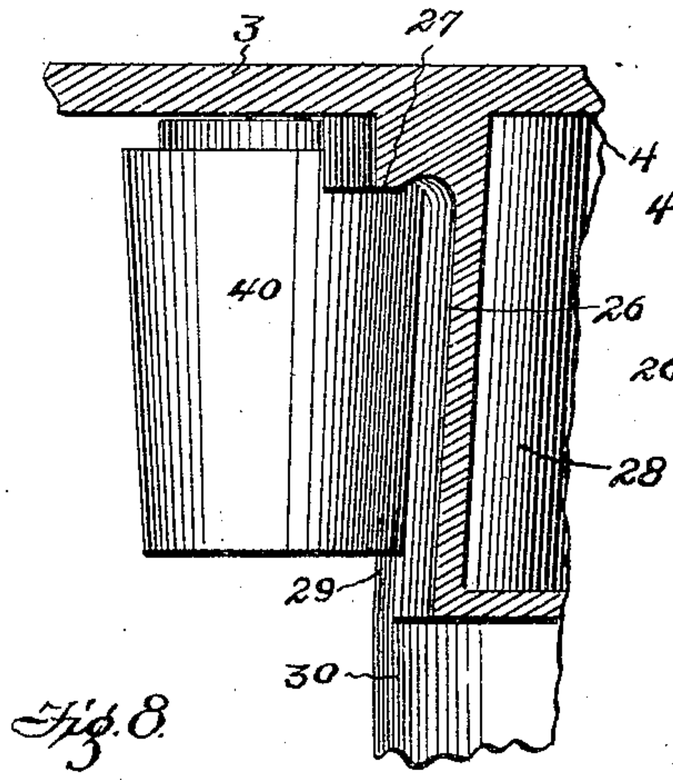


Fig. 8.

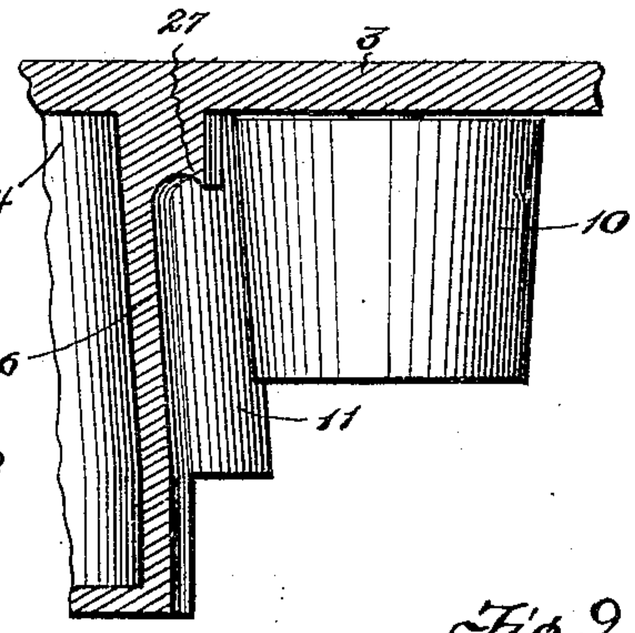


Fig. 9.

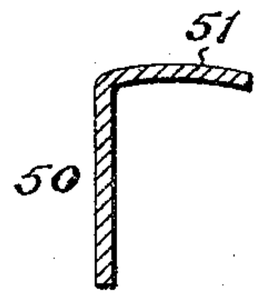


Fig. 10.

WITNESSES:

W. B. Ashley.

Carl Stoughton

INVENTORS,
Charles W. Currier
Joseph Leitschuh

BY Sheffield & Parker

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES W. CURRIER AND JOSEPH LEITSCHUH, OF COLUMBUS, OHIO, ASSIGNORS TO THE FEDERAL MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

COLLAR-SHAPING MACHINE.

No. 842,863. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed July 7, 1904. Serial No. 215,675.

To all whom it may concern:

Be it known that we, CHARLES W. CURRIER and JOSEPH LEITSCHUH, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvements in Collar-Shaping Machines, of which the following is a specification.

Our invention relates to a new and useful improvement in collar-shaping machines.

The object of the invention is to provide a machine of superior construction for folding and shaping a collar.

Another object is to provide a machine of the character described that will be strong, durable, and efficient and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the drawings, wherein—

Figure 1 is a front elevation of the machine and a portion of its supporting means. Fig. 2 is a top plan view of the parts shown in Fig. 1. Fig. 3 is a horizontal sectional view taken on line *x x* of Fig. 1 through the heating-casing and the rollers and looking from the under side. Fig. 4 is a detail plan view of the shoe. Fig. 4ª is a detail inverted plan view of said shoe. Fig. 5 is a detail side elevation of the same. Fig. 6 is a front elevation of the said shoe. Fig. 7 is a fragmentary plan view of the shaping-block and adjacent parts with the top plate and over parts removed and taken on line *y y* of Fig. 1. Fig. 8 is a partial transverse vertical sectional view taken on the line B B of Fig. 2 and looking toward the shaping-roller 40, certain parts of the machine being removed for the sake of clearness. Fig. 9 is a similar view, but looking in the opposite direction toward the roller 10, certain adjacent parts being also removed for the sake of clearness; and Fig. 10 is a vertical sectional view taken on the line C C of Fig. 7.

In the drawings the numeral 1 designates a portion of the table-top upon which the machine is arranged, while 2 designates the platform upon which the machine is supported. The machine is more especially designed to be used in connection with our dampening and burnishing machine and shaping attachment which form the subject-matter of separate applications, filed July 7, 1904, and bearing Serial Nos. 215,676 and 215,677, respectively.

The machine comprises a top plate 3, which covers and extends forward from the steam-casing 4. A supply-pipe 5 conveys steam to the casing, which travels therethrough and exhausts through the pipe 6. The pipes 5 and 6 assist in supporting the platform, which may be additionally supported from the top 1 by any suitable means. The steam-casing 4 rests upon feet 7, which are secured to the platform 2. Supported from one corner of the top plate 3 by means of an upturned lug 9 is a flaring-mouthed guide-shoe 8. This guide-shoe is so shaped and formed as to readily receive the collar from the dampening and burnishing machine herein referred to and break it down into proper form to be received by the conical rollers 10 and 11. These rollers are oppositely tapered, so as to cause their faces to lie parallel, and are disposed immediately in the rear of the shoe 8. A drive-shaft 12 passes through the platform 2 and top plate 3 and supports the roller 11 in proper relation to the shoe and extends some distance above the said top plate, which is formed with a bearing-boss 13, which supports the collared gear 14, fixed upon the upper end of the drive-shaft. The gear 14 meshes with a gear 15, which is fixed upon the upper end of the shaft 16, which passes through a slot 17 in the top plate and supports on its lower end a downwardly-tapering roller 10 in proper relation to the upwardly-tapering roller 11.

The shaft 16 is supported in the bearing-sleeve 18, which is formed integral with the arm 19, projecting from the head 20. The head 20 is disposed between the portions of the bifurcated bearing-head 21, both of which are pivoted upon a stub-shaft 22. It is readily apparent that by so supporting the shaft 16 the roller 10 is swingingly mounted, and in order to hold the roller normally in contact with the roller 11 a coiled spring 23, having one end secured to the sleeve 18 and the other end to a stud 24, is provided. Thus as the collar enters between the rollers 10 and 11 the roller 10 is forced outwardly against

the tension of the spring, which returns the roller to its normal position after the collar leaves the same. The roller 11 rotates in a recess 25, formed in the front wall of the steam-casing 4, which serves to heat the said roller and which heat is transmitted to the roller 10 by contact. Extending from the recess 25 and formed along the front wall of the heating-casing is a curving and guiding face 26, which is preferably inclined upwardly and rearwardly to conform to the angle of the plane formed by the meeting faces of the said rollers. The collar is smoothed, dried, and held in contact with the said curved face by a concaved downwardly-projecting lip 27, which terminates with the curved face in the recess 28, formed in the front wall of the casing, and in which rotates the upwardly-converging portion 29 of the roller 30. The roller 30 is keyed upon the shaft 31, which extends upwardly through the top plate. A swinging arm 32 is pivoted upon the shaft 31 and formed with an upwardly-extending collar 33, upon which bears the gear 34, keyed upon the shaft 31. The gear 34 meshes with a gear 35, loosely mounted upon the stub-shaft 22. The bifurcated head hereinbefore described supports, by means of arms 36, a bearing-sleeve 37, through which passes a shaft 38, operating through a slot 39 in the top plate and supporting upon its lower end a downwardly-tapering roller 40. A pinion 41, keyed upon the upper end of the shaft 38, is held in mesh with the gear 34 by a coiled spring 42, secured at one end to the sleeve 37 and at its opposite end to a stud 43, projecting upwardly from the top plate 3. This spring also acts to yieldably hold the shaping-roller 40 in contact with the curved face of the shaping-block 44, which is supported from the pivoted arm 32 by the bracket 45. The block 44 is pressed forward by a coiled spring 46, supported between the block and the casing 4. The arm 32 carries a set-screw 47, which abuts a lug 48, projecting at an angle from a vertical lip 49, formed integral with the top plate 3, for the purpose of limiting the forward movement of the pivoted arm 32 and by adjusting which the relative position of the block 44 to the roller 40 may be varied. A curved delivery-chute 50, having the inwardly-extending guide-flange 51, is formed with a downward spiral twist, so as to carry the collar from the shaping-block downward and deliver the same upon the platform 2. For the purpose of imparting motion to the various parts a drive-pulley 52 is mounted upon a shaft 53, supported from the platform 2 upon standards 54 and having keyed upon its inner end between the said standards a pinion 55. The pinion 55 is disposed over and meshes with a large gear 56, keyed upon the end of the shaft 57, supported upon standards 58, mounted upon the table-top 1. The shaft 57 carries on its inner end a beveled gear 59, which meshes with a bevel-gear 60, secured upon the lower end of the drive-shaft 12. The pulley 52 is driven so as to cause the drive-shaft 12 to rotate from right to left.

The collar having been previously dampened, burnished along its seam, and partly shaped is delivered to the shoe 8, which breaks down the inner and outer portions thereof, so as to present it in proper form to the rollers 10 and 11. Passing between the said rollers the said parts of the collar are brought together, so as to lie substantially parallel, and it is forced along the curving-face 26, its seam traveling in the concaved portion of the lip 27 until it reaches the upwardly-converging portion 29 of the roller 30 and the shaping-roller 40. The converging portion of the roller 30 preferably conforms to the angle of inclination of the wall 26 and merely acts as a guiding and propelling means to deliver the collar between the shaping-roller 40 and the curved shaping-block 44. The collar having reached this point is suitably shaped and needs only to be curled, which function is accomplished by the shaping-block and the shaping-roller 40. As the collar is propelled forward along the face of the shaping-block it enters the delivery-chute 50, which carries it down and drops it upon the platform 2, finished and ready for delivery to the wearer. It is to be understood that by yieldably mounting the rollers 10 and 40 collars of various thicknesses may be passed between the said rollers and adjacent parts, these rollers which while giving to the collar firmly contact with the same. The purpose of pivotally supporting the block and the chute 50 is to allow the same to conform somewhat to the general curvature of the collar and prevent the same from binding or sticking. However, these last-named parts form the subject-matter of a separate application, filed July 7, 1904, and bearing Serial No. 215,677, hereinbefore mentioned, and have no special bearing upon the present machine except as a means for assisting in its general operation.

It is to be observed that as the collar is passed from the rollers 10 and 11 it has a tendency to ride upward, which causes it to firmly contact with the surface of the concaved groove of the lip 27, which contact is maintained throughout the travel of the collar along the said lip. This lip being thoroughly heated by the casing 4 not only dries the collar-seam, but smooths all irregularities thereon.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with a heating-wall and a top plate, of a guiding and folding shoe supported from the top plate, and a pair of

oppositely-tapered shaping and propelling rollers supported from the top plate in the rear of the shoe and in juxtaposition to the heating-wall.

2. In a device of the type set forth, a heating-wall formed with roller receiving and heating recesses, an inclined curving-face provided with a guide at its upper end, rollers in said recesses for propelling a collar over the said curving-face, a propelling-roller acting in conjunction with one of said rollers, and shaping and curving means associated with the other of said rollers.

3. In a machine of the character described, the combination with a heating-chamber having recesses formed in the walls thereof, of a tapered propelling-roller mounted in one of said recesses, a second tapered roller yieldingly mounted and adapted to act in conjunction with the first-named roller to propel a collar, a guide-shoe adapted to deliver collars between said rollers, a tapered roller mounted in the other recess of the wall of the heating-chamber, a roller yieldingly mounted adjacent the last-named roller, and a guiding-surface having an overhanging lip which is located between the propelling-rollers and the last-named rollers.

4. In a machine of the character described, the combination with a heating-chamber having recesses formed in the walls thereof, of a tapered propelling-roller mounted in one of said recesses, a second tapered roller yieldingly mounted and adapted to act in conjunction with the first-named roller to propel a collar, a guide-shoe adapted to deliver collars between said rollers, a tapered roller mounted in the other recess of the wall of the heating-chamber, a roller yieldingly mounted adjacent the last-named roller, a guiding-surface having an overhanging lip which is located between the propelling-rollers and the last-named rollers, and a shaping-block acting in conjunction with the last-named rollers for curling a collar.

5. In a device of the character described, the combination with a heating-chamber, a portion of the wall of which forms a guide having an overhanging lip, of a propelling-roller located in a recess formed in the wall of the heating-chamber upon one side of said guide, of a second propelling-roller yieldingly mounted adjacent the first-named propelling-roller, a guide-shoe adapted to deliver collars to said propelling-rollers, a propelling-roller located in a recess formed in the wall of the heating-chamber upon the other side of the guide, a shaping-roller yieldingly mounted adjacent said last-named propelling-roller, and a shaping-block acting in conjunction with the shaping-roller for curling a collar.

6. In a device of the character described, the combination with a heating-chamber, a portion of the wall of which forms a guide having an overhanging lip, of a propelling-roller located in a recess formed in the wall of the heating-chamber upon one side of said guide, a second propelling-roller yieldingly mounted adjacent the first-named propelling-roller, a guide-shoe adapted to deliver collars to said propelling-rollers, a propelling-roller located in a recess formed in the wall of the heating-chamber upon the other side of the guide, a shaping-roller yieldingly mounted adjacent said last-named propelling-roller, a shaping-block yieldingly mounted adjacent the shaping-roller and acting in conjunction therewith for curling a collar, and means for adjusting the limit of movement of said shaping-block.

CHARLES W. CURRIER.
JOSEPH LEITSCHUH.

In presence of—
A. L. PHELPS,
W. L. MORROW.