J. T. BOND.

HEAD FOR SPINNING PAPER AND THE LIKE.

APPLICATION FILED OCT. 28, 1915.

1,184,510. Patented May 23, 1916.

Fig. 1.

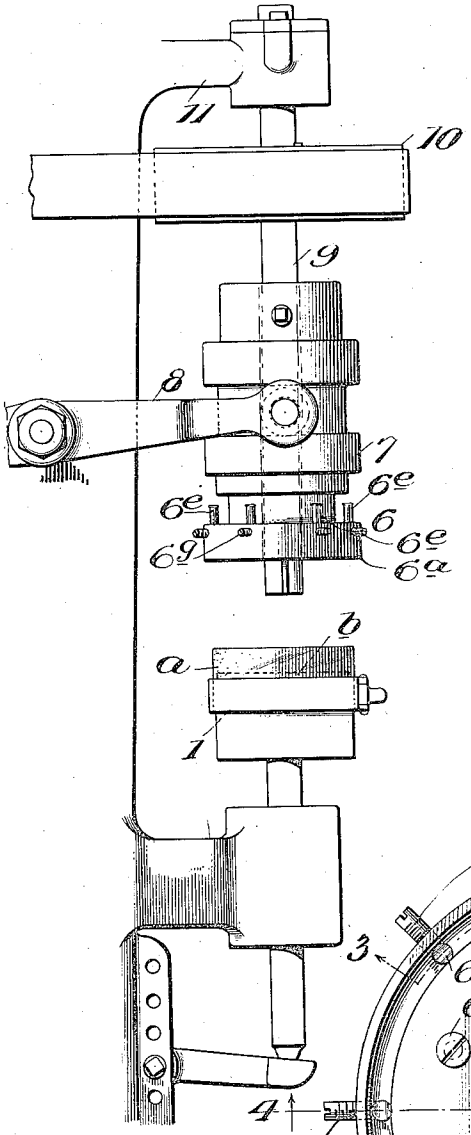


Fig. 5.

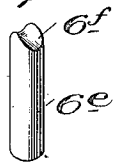


Fig. 3.

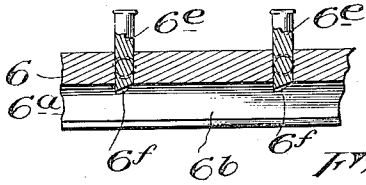


Fig. 6.



Fig. 7.



Fig. 4.

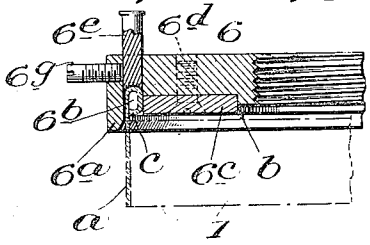
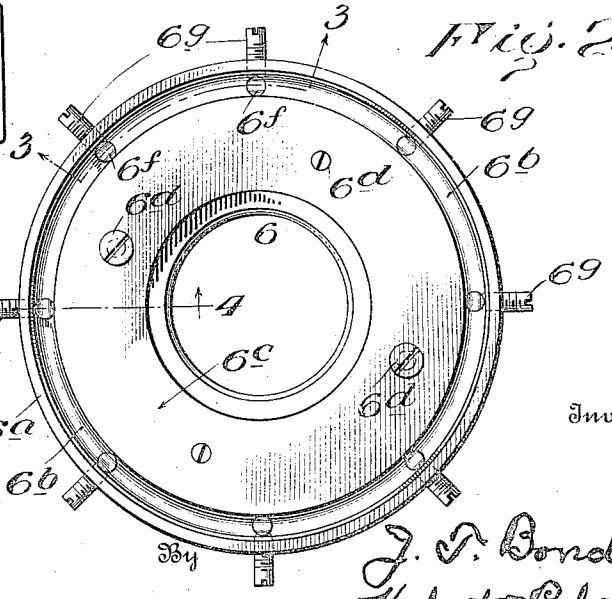


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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HEAD FOR SPINNING PAPER AND THE LIKE.

1,184,510. Specification of Letters Patent. Patented May 23, 1916.

Application filed October 28, 1915. Serial No. 58,440.

To all whom it may concern:

Be it known that I, JOSEPH T. BOND, a citizen of the United States, and resident of Baltimore, State of Maryland, have invented certain new and useful Improvements in Heads for Spinning Paper and the like, of which the following is a specification.

This invention relates to certain improvements in spinning or crimping heads for use in machinery for making paper receptacles; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I now believe to be the preferred embodiment or mechanical expression of my invention from among other forms, constructions and arrangements within the spirit and scope thereof.

An object of the invention is to provide certain improvements in heads for rolling or spinning down the ends of paper walls in the manufacture of paper receptacles and covers therefor whereby such heads are provided with readily removable and insertible paper engaging bits or elements that can be easily adjusted toward the work.

A further object of the invention is to provide a head for spinning down the ends of the cylinders or other walls of paper or like material receptacles in the formation of closures for said receptacles, wherein the paper spinning or working elements are formed by the ends of a series of pins arranged approximately parallel with the longitudinal axis of the head.

A further object of the invention is to provide a head for spinning the ends of receptacles and cover walls composed of paper or like material, with spinning or paper engaging bits or elements so constructed and arranged as to render said bits individually removable, insertible, and adjustable.

A further object of the invention is to provide a head for spinning paper walls and the like with improved paper engaging and working bits or elements that are individually adjustable to take up wear, and that have their ends formed to operate on the paper walls in spinning the same.

A further object of the invention is to provide certain improvements in construction and arrangement for the production of a highly advantageous and efficient head for spinning the ends of the walls of paper material receptacles and their covers.

The invention consists in certain novel features in construction and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings: Figure 1, is a side elevation of a portion of a machine for making paper receptacles and covers therefor, which includes the spinning head of my invention. Fig. 2, is a detail plan of the under or working face of the spinning head illustrated. Fig. 3, is a detail vertical section in the plane of the line 3—3, Fig. 2. Fig. 4, is a vertical section in the plane of the line 4—4, Fig. 2, dotted lines indicating a portion of paper wall being spun down thereby. Fig. 5, is a detail perspective of one of the paper working bits or pins carried by said head. Figs. 6 and 7, are detail sectional views of portions of paper inclosing walls and end closures having end closure locking beads different in vertical thickness.

In the embodiment illustrated by the accompanying drawings, I provide a mandrel 1, over which the paper wall to be spun is slipped, while the upper end of this mandrel forms a platen or anvil on which is placed the paper or other disk that is to close the end of the paper wall. This mandrel is supported and controlled by any suitable means which form no part of my present invention.

I show a cylindrical paper wall *a*, surrounding the mandrel and projecting upwardly therefrom a distance above the horizontal plane of the end face or anvil thereof, and snugly fitting within the projecting end of this wall and resting on said anvil or upper end of the mandrel, I show a paper disk *b*.

Any suitable means can be provided to hold the wall against rotation on the mandrel during the spinning operation hereinafter described, but such means constitute no part of my present invention and I have not fully illustrated the same.

In the example illustrated, I provide a rotary and vertically movable spinning head above and alined with the mandrel, and adapted to move down to the paper wall

projecting upwardly therefrom and by a spinning action to roll and turn the upper end of the wall inwardly and downwardly and tightly onto said disk and thereby form a joint, roll or shoulder *c*, within the end of the paper wall and confining the disk against movement therefrom. However, my present invention is not limited to the vertical movement of the head, nor in fact to the rotation of the head, as any other suitable mechanisms can be provided to cause relative rotary movement between the head and paper wall, and relative movement of the wall and head toward and from each other without requiring that the head itself rotate and without requiring that the head itself move toward and from the paper wall. However, in the example illustrated, a rotary vertically-movable spinning head 6, is provided, and this head is secured to the lower end of a vertically movable rotary sleeve 7, that is raised and lowered by a suitably operated swingable arm or fork 8. This sleeve is rotated by and is vertically movable on the lower end of a rotary shaft 9, provided with suitable driving means such as pulley 10. This shaft is mounted in and depends from a suitable support 11, by which it is held against vertical movement with said sleeve.

The spinning head 6, comprises a metal block or disk having a central threaded bore by which the head is screwed onto or otherwise secured to the lower end of the sleeve 7, concentric with the shaft 9, which is in alinement with the longitudinal axis of the paper wall on the mandrel. This head 6, is formed with an exterior annular depending lip or flange 6^a, having an internal cylindrical surface whose diameter is slightly greater than the external diameter of the projecting upper end of the paper wall to be spun, while the under side or face of said head is formed with an annular or circular vertical groove or socket 6^b, at the base of said flange and whose outer vertical wall is formed by said flange. The radial width of this groove is approximately uniform throughout the circle of the groove, and the inner vertical wall of said groove or socket is preferably formed in part at least, by the vertical peripheral cylindrical edge of a flat metal ring 6^c, removably fitted in an annular recess or socket in the face of the head and normally fixed therein by removable machine screws 6^d. This groove or socket 6^b, constitutes the paper bead or seam shaping or molding portion of the spinning head and it contains paper spinning bits or elements to start the wall on its inward and downward curl and to then force the same down to complete the bead or seam *c*. These bits consist of a plurality of similar straight elongated steel or other suitable metal pins 6^e, arranged longitudinally of the head and extending therethrough and projecting down into said groove or socket through the roof thereof and uniformly spaced apart around the circle of the groove. The lower ends of the bits preferably all project a uniform distance into the groove and below its roof to form the desired series of paper-depressing elements, and the lower extremity 6^f, of each bit is preferably diametrically concaved or grooved at an inclination or bevel so as to present a concaved beveled end surface to the paper wall in the direction of rotation of the head.

The head is formed with a series of preferably uniformly spaced longitudinal holes or perforations opening through the top face of the head and through the roof of the groove 6^b, to receive said bits 6^e. Each bit fits snugly in its hole yet so as to permit longitudinal adjustment thereof.

Means are provided whereby the bits can be independently adjusted, can be independently removed from and reinstated in the head, and can be normally locked rigidly in operative position in the desired adjustment. As an example of means that can be provided for this purpose, I show set or clamping screws 6^g, arranged radially of the head and projecting from and operative at the exterior of the periphery of the head and extending through tapped holes in the head into operative engagement with the bits, one set screw being provided for each bit. The radial tapped holes for the screws intersect the holes for the bits between the top face of the head and the roof of the groove, and hence each screw can be adjusted to engage and rigidly clamp and lock its bit in position, or can be as readily adjusted from engagement with its bit to permit longitudinal adjustment or removal of the bit controlled thereby. As the working ends of the bits are subject to excessive wear, I preferably employ elongated straight bits of greater length than the head so that each bit can be repeatedly adjusted longitudinally to take up wear, whereby each bit can be subjected to most extended or long life of service before it becomes so short that it must be discarded for a new full length bit. This feature of ready removal and adjustment is also of peculiar advantage because of the necessity of grinding and re-shaping the working ends of the bits at more or less frequent intervals.

In the operation of the device, the paper wall *a*, (whether it be a full length body for a paper receptacle, or a short length body or wall for a slip cover for a receptacle) is fitted on the mandrel and clamped or otherwise held thereto and the paper end or bottom *b*, is dropped into the projecting end of the wall and onto the mandrel end. The rotary spinning head is then forced down onto the projecting end of the paper wall.

The paper wall enters the flange 6^a, and passes up into the groove and the edge of the wall strikes the outer edge portions of the concaved beveled ends of the bits which start said edge of the wall on its initial inward curve across said concave ends and inwardly across the groove and the opposite edge portions of said concave ends then engage said inwardly moving edge of the paper wall and turn the same down and hence start said wall on its downward movement.

The constantly advancing downward pressure of the head and the rapid revolution thereof cause the beveled concaved bits to quickly crush, compress and curl the paper wall downwardly against the edge of the ring 6^c, which starts the outward curl of the end thereof along the surface of the paper disk *b*, and toward the vertical portion of the paper wall immediately above the plane of said disk. The working ends of the bits completely occupy the width of the groove or socket above the horizontal plane of the ring 6^c, and form a series of beveled shoulders that act on the paper wall to quickly produce the tight roll or seam desired with a smooth finish and of attractive appearance and without breaking or mutilating the paper.

The radial width of the roll or seam *c*, is controlled or determined by the exterior diameter of the ring 6^c, while the vertical width of said seam above the disk *b*, can also be controlled by the vertical thickness of said ring. The ring 6^c, is hence preferably removably secured to the head for easy removal where unduly worn to permit substitution of a perfect ring and also to permit substitution of a ring of slightly different diameter where a roll or seam of different radial width is to be produced, and also for substitution of a ring of different vertical thickness where a roll or seam of different vertical width is to be produced.

It will be noted that, as the rapidly rotating head approaches the disk *b*, in the operation of spinning down the paper wall, the ring 6^c, moves down with said head and as the operation is completed, said ring bears down on said disk and limits the movement of the head toward the disk.

It is evident that various changes, modifications, variations, and departures might be resorted to without departing from the spirit and scope of my invention and hence I do not wish to limit the invention to the disclosures hereof.

What I claim is:—

1. A spinning head for spinning paper container walls to form end closure securing beads, said head having an annular bead-forming groove having inner and outer paper guiding walls, and an annular series of longitudinally adjustable bits having transversely inclined concaved inner ends forming the paper working portion of the roof of said groove and arranged above said paper guiding walls, said bits being arranged longitudinally of said head having their inner ends terminating at the paper working portion of the roof of said groove, substantially as described.

2. A spinning head for the purposes substantially as described, having an annular groove, a depending flange forming the outer wall of said groove, a removable member forming the inner wall of said groove, and removable bits arranged in said groove and adjustable therein toward and from the stock to be spun thereby.

3. A spinning head of the type substantially as described, provided with an annular series of elongated bits arranged and adjusted longitudinally of the head and having inner beveled concaved working ends, and securing means whereby said bits are rendered independently adjustable and removable, said head having a depending outer annular wall to guide the edge of a cylindrical paper wall to said concaved ends of the bits, said head also having an inner approximately cylindrical wall below said ends of the bits to guide the edge of the paper wall turned inwardly thereby.

4. A spinning head of the type, substantially as described, provided with an annular series of similar bits arranged longitudinally of the head and having inner working ends, said head having an outer depending wall below said bit ends to guide the work thereto, and a renewable member forming an inner work guiding wall and means whereby said bits are rendered separately removable and independently adjustable longitudinally.

5. A spinning head, of the type, substantially as described, provided with an annular series of separate bits arranged longitudinally of the head and having inner beveled concaved working ends, said head provided with a central face plate having an annular paper guiding edge below said bit ends.

6. A spinning head having an annular groove and spaced longitudinal holes through the head and into the roof of the groove, longitudinally adjustable and arranged bits arranged removably in said holes and having working ends terminating approximately at the roof of said groove, said head having an annular flange forming the outer wall of said groove, a center face plate the edge of which forms the inner annular wall of said groove, and clamping means whereby said bits can be rigidly clamped in the desired adjustment and whereby said bits are separately removable and longitudinally adjustable.

7. A spinning head having an annular groove, a removable member on the face of

the head and forming a portion of the wall of said groove, and spinning bits arranged in the groove.

8. A spinning head having an annular groove in its working face, an annular series of bits having working ends arranged in said groove, said bits being arranged longitudinally of the head and adjustable longitudinally therethrough, a center face plate the edge of which forms the inner wall of said groove, and clamping screws extending radially into said head and operative from the exterior thereof, one screw being provided for each bit for clamping the same in the desired longitudinal adjustment.

9. A spinning head having an annular depending flange and an annular groove in its working face, one wall of the groove being formed by the flange, a removable ring the peripheral edge of which forms the other wall of said groove, means removably securing said ring to the head to form the face thereof, and spinning bits arranged in said groove.

10. A spinning head having an annular roll or seam shaping groove, and provided with longitudinally elongated spinning bits having concaved beveled ends forming the working roof of said groove, and a removable member forming the inner annular wall of said groove and the face of said head, said bits being longitudinally adjustable through said head and toward the work or stock to be spun thereby, and securing means for said bits whereby the bits are rendered independently adjustable longitudinally and separately removable.

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

JOSEPH T. BOND.

Witnesses:
HOWARD G. BISHOP,
H. N. MARIES.