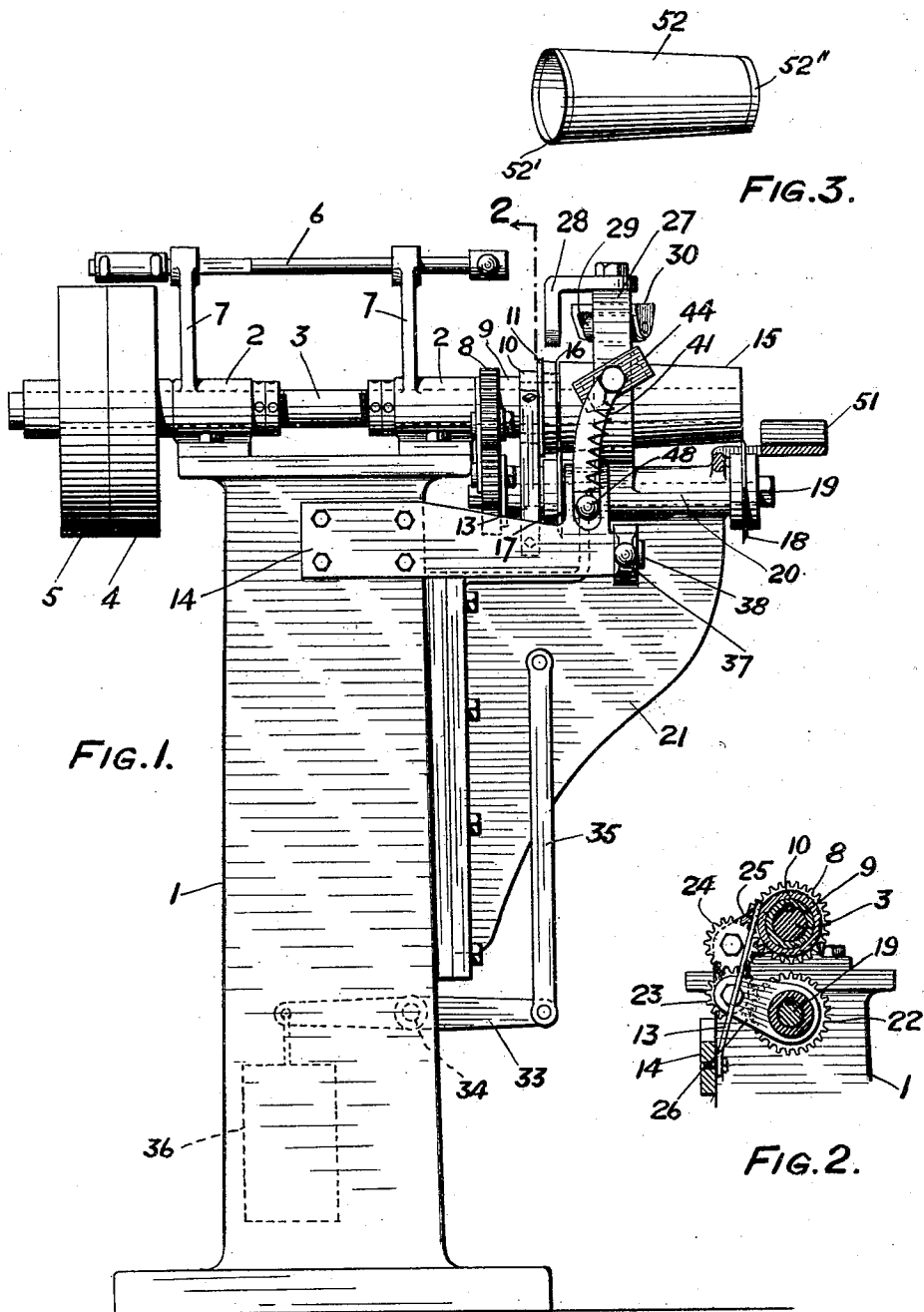


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APPLICATION FILED FEB. 18, 1909.

946,682.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.



WITNESSES:

*Robt. R. Kitchel*  
*Jos. G. Wemyss Jr.*

INVENTOR

*John Nazel*  
BY *Charles H. Butler*

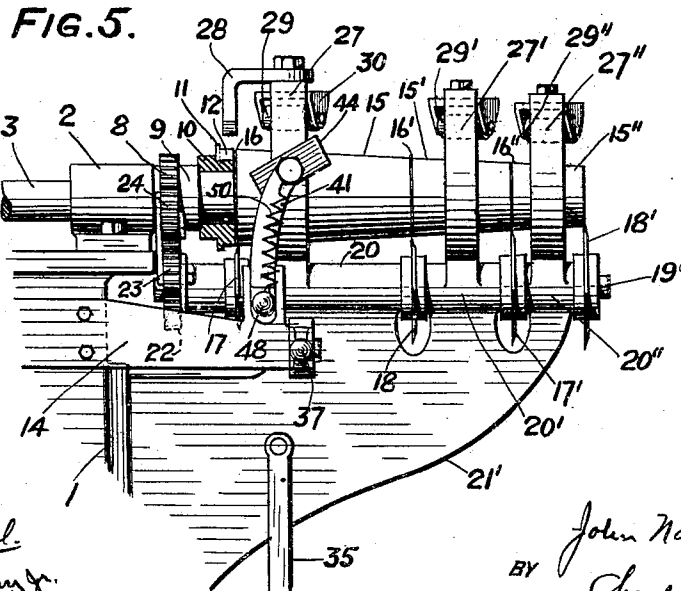
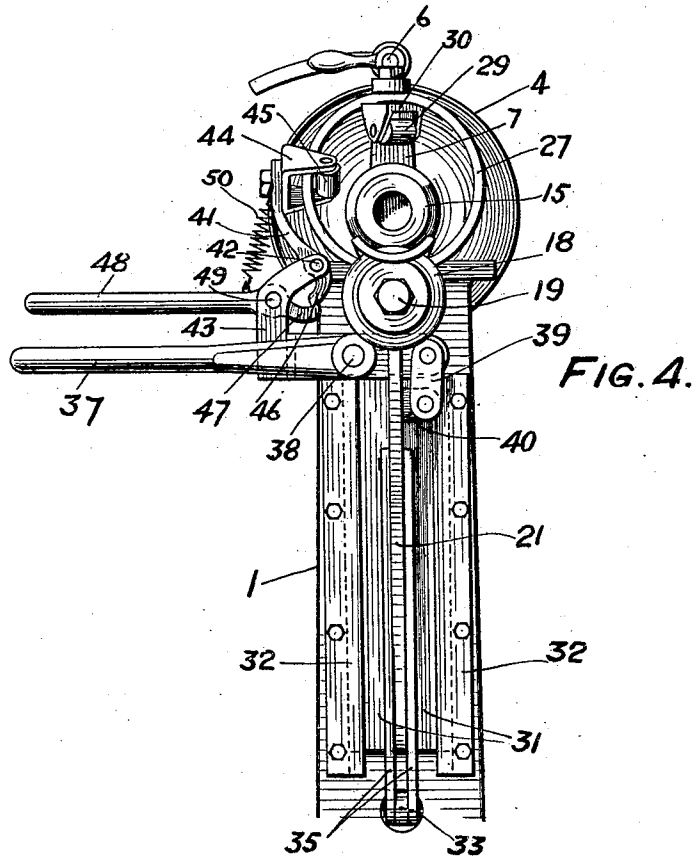
ATTORNEY.

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WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JOHN NAZEL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SANITARY PAPER BOTTLE COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

## TUBE-TRIMMING MACHINE.

946,682.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed February 18, 1909. Serial No. 478,605.

*To all whom it may concern:*

Be it known that I, JOHN NAZEL, a citizen of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Tube-Trimming Machines, of which the following is a specification.

My invention is a machine designed particularly for trimming tubular bodies such as are used in the manufacture of paper receptacles.

It comprises, in combination with a revoluble tubular mandrel, improved means for drawing the bodies on the mandrel, trimming the ends of the bodies and discharging the trimmed articles.

The characteristic features of the improvements are disclosed in the following detailed description and the accompanying drawings in illustration thereof.

In the drawings, Figure 1 is a front elevation of a machine embodying my improvements; Fig. 2 is a sectional view taken on the line 2 of Fig. 1; Fig. 3 is a perspective view of an article that has been operated upon; Fig. 4 is an end elevation of the machine, and Fig. 5 is a front elevation of a section illustrating a modified construction.

The machine comprises a base 1 having thereon the bearings 2 in which is journaled a shaft 3. The shaft has fixed thereon a driving pulley 4 and loose thereon an idler pulley 5, a belt shifter 6 which coacts therewith being movable longitudinally in the standards 7 supported by the base. A gear wheel 8 is fixed on the shaft 3 and, on a sleeve 9 carried by the shaft, is a stationary collar 10 having a peripheral flange 11 thereon and a longitudinal slot 12 therein, the collar being held by a brace 13 fixed thereto and to a bracket 14 on the base.

As shown in Figs. 1 to 4 inclusive, the shaft 3 has fixed thereon the conical mandrel 15, between the base of which and the collar 10 is a circular groove 16. Circular cutters 17 and 18 are fixed on the shaft 19 and are disposed in planes parallel to the respective ends of the mandrel, the cutter 17 being adapted to register with the groove 16 to act in shearing relation to the base of the mandrel and the cutter 18 acting in shearing relation to the opposite smaller end of the mandrel. The shaft 19 is journaled in a bearing 20 of a vertically movable sliding

bracket 21 and has fixed on an end thereof a gear wheel 22. The gear 22 is connected with the driving gear 8 through the engaging pinions 23 and 24 carried by the link 25, which is loose on the shaft 3, and the connected link 26, which is loose on the shaft 9. Fixed to the bracket or slide 21 is a yoke 27 which carries a knife 28 adapted to enter the groove 12 and a roller 29 adapted to engage the mandrel 15, the yoke having fixed there- to a bearing 30 which holds the axis of the roller at an angle to the axis of the mandrel. The bracket 21 is controlled, in its vertical movement, by the flanges 31 thereon which are engaged by the guides 32 on the base. A lever 33, having the pivotal support 34 in the base, is connected by links 35 with the bracket which is counterbalanced by a weight 36 carried by the lever. The bracket is moved vertically to position the roller 29 and the cutters by means of a lever 37 having the fulcrum 38 on the bracket 14 and connected by the link 39 with a bearing 40 on the bracket. A lever 41, having the fulcrum 42 carried by the bearings 43 of the bracket 14, has fixed to the upper arm thereof the bearing 44 in which is journaled a roller 45, the latter having its axis disposed at an angle to the axis of the mandrel 15. The lever 41 is provided with the bent lever arm 46 which is engaged by the arm 47 of a lever 48 having the fulcrum 49 on the bearing 43. The depression of the lever 48 acts through the arms 46 and 47 to throw the roller 45 against the mandrel, the roller being normally held in the withdrawn position by a spring 50 connecting the levers. A rest 51 is carried by the bracket adjacent on the mandrel for the purpose of having ing the conical tube 52 which is to be placed its ends 52' and 52'' trimmed.

As shown in Fig. 5, the capacity of the apparatus may be extended by adding to the mandrel 15 the sections 15' and 15'', the several sections being of such different sizes as desired and separated by the circular grooves 16' and 16'' for receiving the cutting knives. The shaft 19', journaled in the bearings 20, 20' and 20'' of the vertically reciprocating bracket or slide 21', is provided with circular cutters 17, 18, 17', and 18', which are revolved by the gear 22 fixed on the shaft and connected with the gear 8 by the idlers 23 and 24, as previously

described. Yokes 27, 27' and 27'' are carried by the respective bearings 20, 20' and 20''. The yoke 27 carries the knife 28, which is adapted to enter the slot 12, and the angularly disposed roller 29 which is adapted to make contact with the mandrel section 15. The respective yokes 27' and 27'' carry the rollers 29' and 29'' angularly disposed to and adapted to make contact with the respective mandrel sections 15' and 15''.

The bracket is reciprocated, to move the knives and rollers alternately into operative position, by means of the lever 37, and the bearings 43 have fulcrumed therein the lever 41 supporting the roller bracket 44 and the hand lever 48 coacting therewith, as previously described.

In operation, a tubular body is passed onto the revolving mandrel or mandrel section 15, and the lever 48 is depressed, by which the lever 41 is caused to throw the roller 45 against the body and the latter is drawn into closely fitting relation to the mandrel. The body being positioned, the lever 48 is released and the roller 45 withdrawn through the action of the spring 50 on the arm 41. The lever 37 is now depressed, the bracket 21 is elevated and the revoluble knives 17 and 18 (in the form shown in Fig. 1) or 17', 18, 17', and 18' (in the form shown in Fig. 5) coact with the mandrel or mandrel sections to trim the tube and, in the modified construction, divide it into sections. The revolving knives having performed their functions, they are withdrawn by depressing the bracket. Thereby the knife 28 is depressed to cut the ring 52' trimmed from the base of the body and the roller 29 (in the form shown in Fig. 1) or the rollers 29, 29' and 29'' (in the form shown in Fig. 5) are pressed against the trimmed body or bodies and discharge the same from the mandrel.

Having described my invention, I claim:

1. In a trimming machine, a revoluble mandrel, means for drawing an article on said mandrel, cutters, means whereby said cutters are brought alternately into action, and means for discharging said article from said mandrel.

2. In a trimming machine, a revoluble mandrel, means for drawing an article on said mandrel, a manually operated lever for throwing said means into action, a revoluble cutter, means whereby said cutter is reciprocated, means whereby said article is withdrawn from said mandrel and a manually operated lever for throwing said means last named into action.

3. In a trimming machine, a revoluble shaft, a mandrel revolved by said shaft, a stationary bearing adjacent to said mandrel, mechanism having cutters thereon adapted to be moved alternately into coöperation with said mandrel and bearing respectively,

and means whereby said shaft revolves one of said cutters.

4. In a trimming machine, a revoluble mandrel, a roller having an axis angularly disposed to the axis of said mandrel, and means for moving said roller into and out of coöperative relation with said mandrel.

5. In a trimming machine, a revoluble mandrel, rollers having axes angularly disposed to the axis of said mandrel, and means whereby said rollers can be moved alternately into coacting relation with said mandrel.

6. In a trimming machine, a revoluble mandrel, a reciprocating mechanism, a roller adapted to be carried by said mechanism alternately into and out of coöperation with said mandrel, an oscillating mechanism, and a roller adapted to be carried by said oscillating mechanism alternately into and out of coöperation with said mandrel.

7. In a trimming machine, a base, a mandrel journaled on said base, mechanism connected in reciprocating relation to said base, a knife journaled in said mechanism, a second knife carried by said mechanism, and a roller carried by said mechanism, one of said knives acting alternately with the other.

8. In a trimming machine, a base, a mandrel journaled on said base, a bracket reciprocating on said base, knives journaled on said bracket and adapted to act on an article carried by said mandrel, a knife fixed to said bracket and adapted to act on material trimmed from said article, and a roller carried by said bracket and adapted to act on said article.

9. In a trimming machine, a revoluble mandrel, reciprocating mechanism having a roller angularly disposed to said mandrel, a lever for operating said mechanism, a lever having a roller angularly disposed to said mandrel, and a lever for operating said roller carrying mechanism last mentioned.

10. In a trimming machine, a base, a shaft journaled thereon, a conical mandrel fixed to said shaft, a stationary collar adjacent to the base of said mandrel, a reciprocating slide, revoluble knives journaled on said slide and adapted to be moved into coaction with said mandrel, and a cutter fixed to said slide and adapted to be moved into coaction with said collar.

11. In a trimming machine, a journaled shaft, a conical mandrel fixed to said shaft, a stationary collar adjacent to the base of said mandrel, a reciprocating slide, revoluble knives journaled on said slide and movable thereby into coöperative relation with said mandrel, a cutter fixed to said slide and movable thereby into coöperative relation with said collar, and a journaled roller carried by said slide into and out of coöperative relation with said mandrel.

12. In a trimming machine, a base, a shaft

journalled on said base, a conical mandrel  
fixed to said shaft, a stationary collar ad-  
jacent to the base of said mandrel, a slide  
connected in reciprocating relation to said  
5 base, revoluble cutters carried by said slide  
into coöperative relation with said mandrel,  
a cutter carried by said slide into coöperative  
relation with said collar, a roller carried by  
said slide into coöperation with said man-  
10 drel, a lever having a fulcrum supported by

said base, and a roller carried by said lever  
into coöperation with said mandrel.

In witness whereof I have hereunto set  
my name this 17th day of February, 1909, in  
the presence of the subscribing witnesses.

JOHN NAZEL.

Witnesses:

ROBERT JAMES EARLEY,  
JOS. G. DENNY, Jr.