E. CLAVIEZ.

STRIP FOLDING MECHANISM.

APPLICATION FILED AUG. 6, 1912.

1,201,804.

Patented Oct. 17, 1916.

2 SHEETS—SHEET 1.

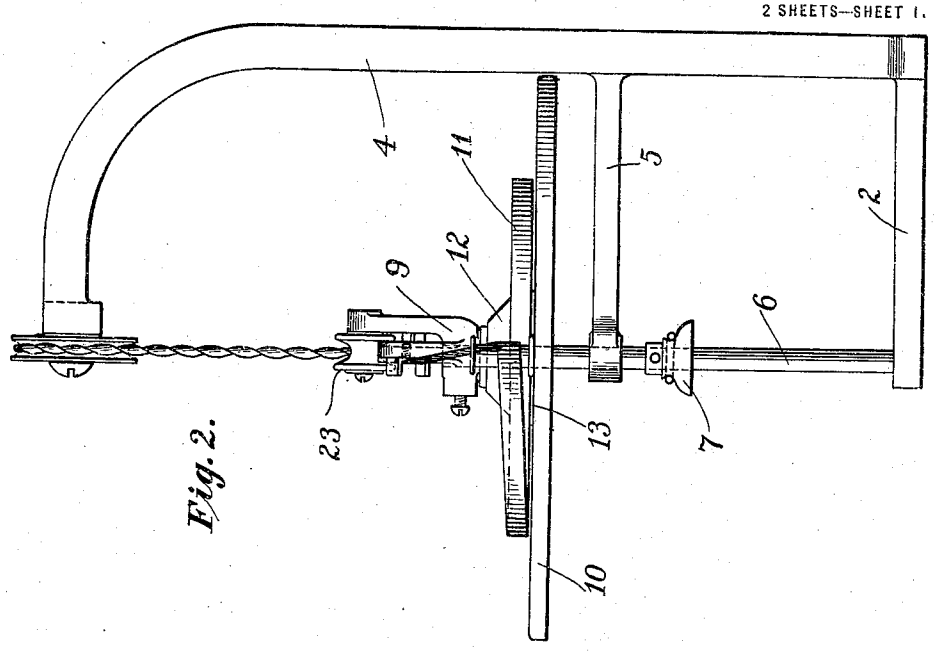


Fig. 2.

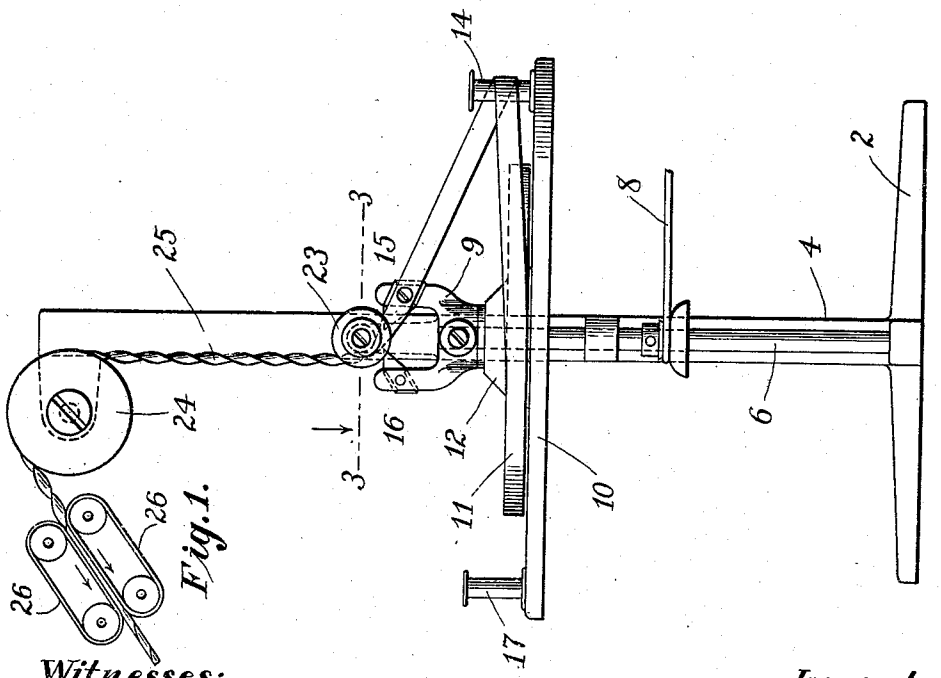


Fig. 1.

Witnesses:

Aug. P. Jurgensen

Chas. W. La Rue

Inventor:

Emil Claviez

by Wilder M. Stone

Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 9.

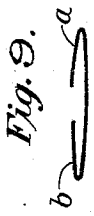


Fig. 7.

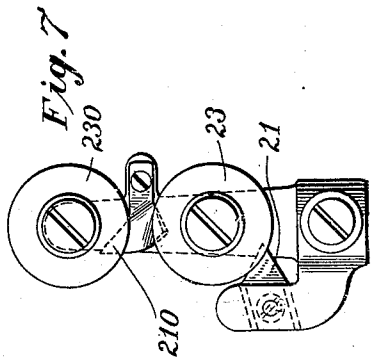


Fig. 5.

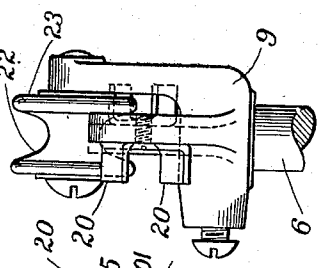


Fig. 6.

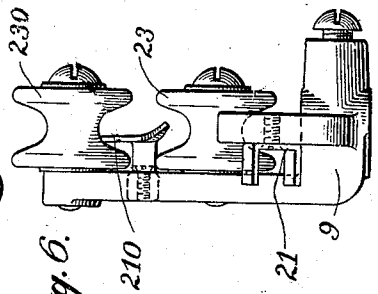


Fig. 3.

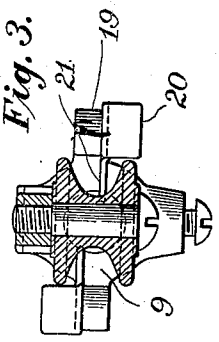


Fig. 4.

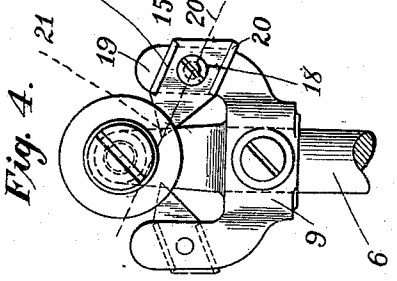
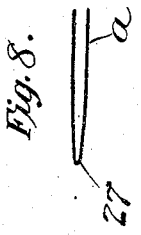


Fig. 8.



Witnesses:

Aug. T. Jurgensen

Chas. W. La Rue

Inventor:

Emil Claviez

by Wilbur M. Stone

Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL CLAVIEZ, OF ADORF, GERMANY, ASSIGNOR TO AMERICAN TEXTILOSE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

STRIP-FOLDING MECHANISM.

1,201,804. Specification of Letters Patent. Patented Oct. 17, 1916.

Application filed August 6, 1912. Serial No. 713,523.

To all whom it may concern:

Be it known that I, EMIL CLAVIEZ, a subject of the Emperor of Germany, and a resident of Adorf, in Vogtland, Kingdom of Saxony, German Empire, have invented certain new and useful Improvements in Strip-Folding Mechanism, of which the following is a specification.

This invention relates to mechanism for folding strips of flexible material, such as paper, for forming into threads.

The object of my improvements is to provide mechanism of the class specified, simple in construction and efficient in operation.

To these ends my improvements comprise parts and combinations of parts, illustrated in their preferred embodiment in the drawings accompanying this specification, wherein—

Figure 1 is a front elevation of my mechanism. Fig. 2 is a corresponding side elevation. Fig. 3 is a plan view, partly in section, on line 3, 3 of Fig. 1, of the folding head. Figs. 4 and 5 are, respectively, front and side elevations, corresponding with Fig. 3. Figs. 6 and 7 are side and front elevations, respectively, of a modification of the folding head. Figs. 3 to 7 inclusive, are to a larger scale than Figs. 1 and 2. Fig. 8 is an enlarged diagrammatic cross section of one form of the folded strip. Fig. 9 is a similar view of another form of the folded strip.

In the assembled views of Figs. 1 and 2 I have illustrated a simple frame comprising base 2, upright 4 and spindle arm 5. The usual twisting spindle 6 has a bearing in said arm 5 and has its lower end in a step bearing in base 2. The usual pulley 7 is fixed to said spindle 6, and power for rotating said spindle may be communicated by the usual belt 8. Fixed to the upper end of said spindle, for rotation therewith, is rotating head 9, and secured to said spindle below said head is table 10, for supporting a coil of strip material 11. Said table is preferably provided with a hub 12, on which the coil of material is centered, and between said coil and said table 10 is a sheet of material 13, such as leather or felt, for producing a slight friction between said coil and said table, thus applying tension to the strip. Fixed to said table, and remote from the axis thereof, is post 14 for guiding the strip from the coil to the folding means in head 9. I preferably provide two oppositely disposed folders, indicated in a general way by 15, 16 on said head 9, for coaction with a common grooved roll 23, mounted for free rotation just above and in close proximity to said folders 15, 16. Post 14 is for use in coaction with folder 15, and diametrally opposite I provide a similar post 17, for use in coaction with folder 16. Said folders are employed one at a time and are preferably proportioned for different widths of strips, folder 15 being for a wider strip than folder 16.

The folder, as 15, is preferably made of sheet metal fastened as by screw 18 to arm 19 of head 9. Said folder is provided with guiding means for the strip, comprising opposite flanges 20, 20, and a pointed turning blade 21 reaching inwardly toward the axis of spindle 6 and terminating within groove 22 of roll 23. Said pointed turning blade 21 is located at one side of the medial plane (normal to the axis of the roll) of groove 22 and so far below the axis of the roll that a medial line, as 201, through the point of said guide midway between flanges 20, 20, Fig. 4, will be substantially tangential to the bottom of the groove; so that the strip of paper will pass off the point of said blade between a flange of the roll and said medial plane through the bottom of the groove. Said pointed turning blade is efficient to crease the strip lengthwise, midway its width, and to cause it to fold, somewhat, as it encounters the side of the groove of the roll. Thereupon said curved groove, in coaction with the circular curvature of the roll, around which roll the partly folded strip is led for about 80 degrees, continues and completes the folding of the strip. Turning blade 21 is located at one side of the medial plane of groove 22 so that when the strip folds as it passes around a portion of the periphery of the roll the folded strip will lie midway between the opposite flanges of the roll and in the middle of said groove. Said strip, with its lengthwise fold completed and set by its passage around said

grooved roll, is then led upwardly toward and over roll 24 and, by the rotation of spindle 6, and head 9 is twisted as it passes from roll 23 to roll 24, as shown at 25. After passing over roll 24 the twisted strip may be led between condensing or rubbing belts 26, 26, of well known construction, and which belts may be actuated in the direction of their arrows to draw the strip from coil 11 through the mechanism.

My improved mechanism so far described is efficient for making a single fold, see Fig. 8, lengthwise in the strip before twisting said strip.

In Figs. 6 and 7 I have illustrated a modification for producing the double folded strip of Fig. 9. In this modification I employ pointed turning blade 21, in coaction with primary grooved roll 23, and thereabove secondary pointed turning blade 210 in coaction with secondary grooved roll 230, blade 21 folding one edge *a* and blade 210 folding the other edge *b*. For thus folding the strip, first near one edge and then near the other edge, the point of the first or lower folder, Fig. 7, is offset downwardly from a medial line through the guide and in the upper or second folder 210, that point is offset upwardly from such a medial line.

By the phrase "folding the strip transversely upon itself" as herein used is meant a continuous uniform folding as illustrated for instance in Figs. 8 and 9 and as opposed to irregular and varying folding.

I claim:

1. Strip folding mechanism including in combination a grooved member, a guide for the strip and a pointed turning blade located at one side of the medial plane of the groove in said grooved member, the medial line of said turning blade being substantially tangential to the bottom of said groove thereby to cause the strip in passing to fold laterally about the point of said blade and deliver into said groove.

2. Strip folding mechanism including in combination, a turning blade provided at its delivery end with a point, means for guiding a strip over one side of such blade longitudinally thereof, means located forwardly of the blade for advancing the strip, means for applying tension to the strip rearwardly of the blade, and means for deflecting the strip out of its plane of travel toward the other side of such blade and for deflecting the line of the path of travel of the strip from its previous direction.

3. Strip folding mechanism including in combination a pointed turning blade for initiating the fold in the strip and a grooved member around which the strip is led for completing and setting the fold, said turning blade being located at one side of the medial plane of the groove in said grooved member, the medial line of said turning blade being substantially tangential to the bottom of said groove.

4. Strip folding mechanism including in combination, creasing mechanism comprising a turning blade provided at its delivery end with a point, means for guiding a strip over one side of such blade longitudinally thereof, means for forwarding the strip, means for applying tension to the strip rearwardly of the blade, and means for deflecting the strip laterally of its plane of travel and toward the other side of the blade, and for deflecting the creased and folded strip to a path of travel at an angle to its previous path of travel.

5. Strip folding mechanism including in combination, a guide for the strip, a pointed turning blade, and a grooved roll mounted for free rotation contiguous to said blade, said turning blade being located at one side of the medial plane of the groove in said grooved roll and sufficiently below said roll to deliver the strip into the groove thereof.

6. Strip folding mechanism including in combination, a primary grooved roll mounted for free rotation, a pointed turning blade having its point offset to one side of the medial line of said blade, a secondary grooved roll mounted for free rotation above said primary roll, and a secondary pointed turning blade between said primary and secondary rolls and having its point offset to that side of the medial line of said blade opposite to the offset of the point of the first blade, said pointed turning blades being located relatively to their respective grooved rolls at one side of the medial planes of the grooves thereof and sufficiently below said rolls to deliver the strip tangentially into the grooves thereof respectively.

7. Strip folding mechanism including in combination a grooved roll mounted for free rotation and means terminating in the groove of the grooved roll for folding the strip laterally and for delivering it around the grooved roll, said strip folding means being located at one side of the medial plane of the groove in said grooved roll and sufficiently below said grooved roll to deliver the strip tangentially thereon.

8. Strip folding mechanism including in combination, a pair of grooved rolls adjacently mounted for free rotation, means contiguous to one roll for folding the strip laterally and delivering it around said roll and means between said rolls for further folding the strip laterally and delivering it around the other roll, said folding means being located at one side of the medial planes of the grooves in said rolls and positioned to deliver the strip tangentially within the grooves, all respectively.

9. Strip folding mechanism including in

combination, a grooved member, a guide for the strip, and a pointed turning blade located at one side of the medial plane of the groove in said grooved member and sufficiently below said grooved member to delivery the strip tangentially thereon.

Signed at Plauen in Vogtland, Kingdom of Saxony, German Empire, this 24th day of July, 1912, before two subscribing witnesses.

EMIL CLAVIEZ.

Witnesses:
A. C. ROTH,
ROBERT HEINRICH VIER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."