W. KELLNER.

MACHINERY FOR MANUFACTURING PAPER TUBES.

APPLICATION FILED MAY 6, 1909.

968,855. Patented Aug. 30, 1910.

Fig. 1.

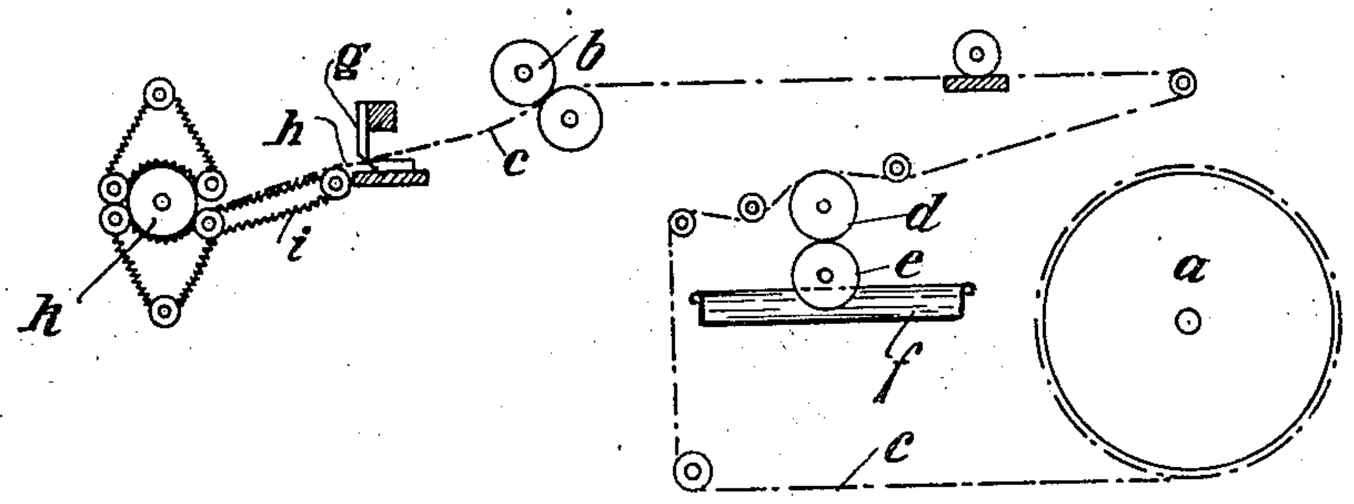


Fig. 2.

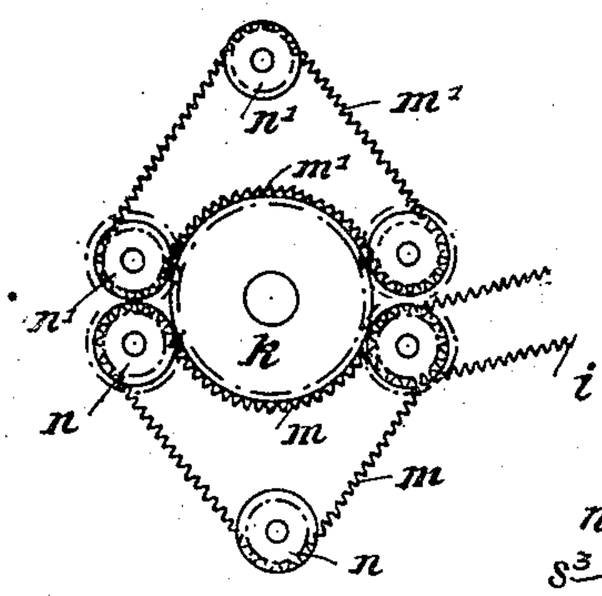
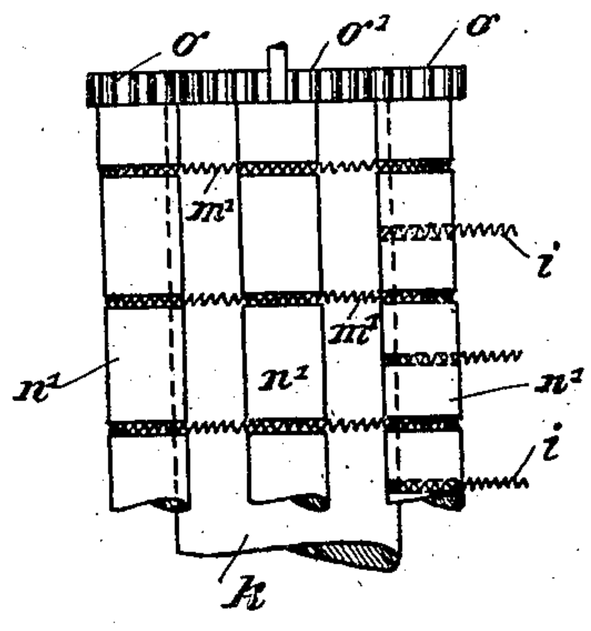


Fig. 3.



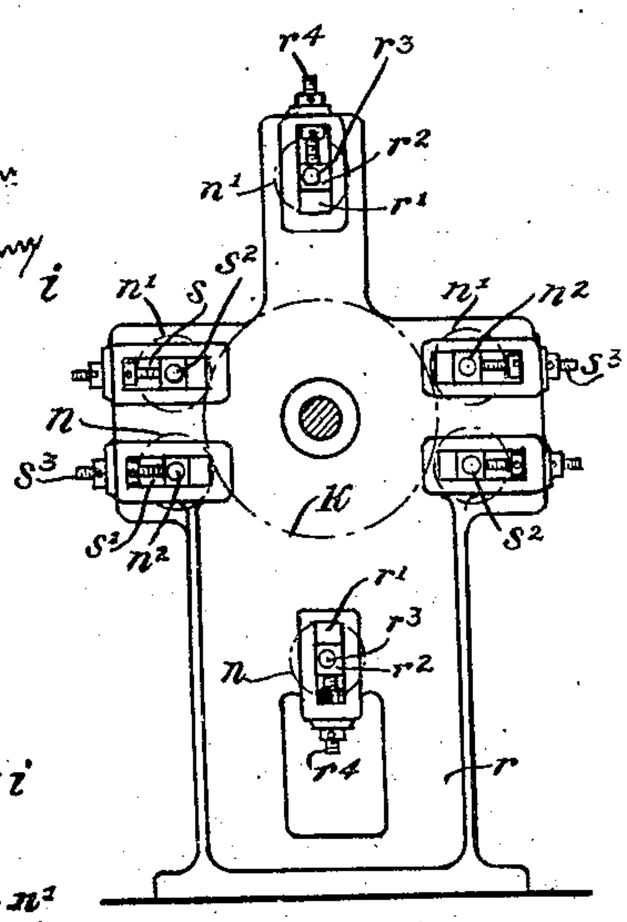


Fig. 4.

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MACHINERY FOR MANUFACTURING PAPER TUBES.

968,855. Specification of Letters Patent. **Patented Aug. 30, 1910.**

Application filed May 6, 1909. Serial No. 494,491.

To all whom it may concern:

Be it known that I, WALTER KELLNER, residing at Langerfeld, near the city of Barmen, Rhenish Prussia, Germany, a subject of the Emperor of Germany, have invented a new and useful Improvement in Machinery for Manufacturing Paper Tubes, of which the following is a specification.

My invention has reference to an improved machine for manufacturing paper tubes by way of rolling a strip of paper cut from a roll on a revolving shaft and the object of my invention is to provide an improved rolling shaft or means to assist the rolling operation, and to carry out all operations mechanically and to manufacture said tubes uniformly, rapidly and economically.

In the accompanying drawings, which form a part of this application Figure 1 is a general arrangement of the machine, Fig. 2 shows a side view of the rolling or paper receiving shaft, and Fig. 3 is a top view of Fig. 2. Fig. 4 is a detail of construction.

Similar numbers and letters of reference denote like parts in the several figures of the drawing.

a is a roll of paper from which the tubes are manufactured the paper *c* being for this purpose pulled from the said roll *a* by rollers *b* as shown in Fig. 1 and guided over a roller *d* which is supplied with glue, for which purpose a roller *e* contacting the roller *d* dips in a glue reservoir *f*, and supplies glue to the roller *d*. The glued paper *c* is then transported by the said rollers *b* to a cutting device *g* by which a strip of paper *h* is separated and led over inclined transporting band *i* to the revolving shaft *k* in order to be formed or transformed into a tube. For this purpose the shaft *k* is surrounded by endless bands, cords or the like of elastic material, I employ in the present example spiral springs *m*, *m*^{1} which are carried close along the circumference of the shaft *k* and guided over rollers *n*, *n*^{1} as shown in Figs. 2 and 3 to form an endless band which bears with an elastic pressure on the said tube rolling shaft *k*. The strip of paper being fed to the said shaft is securely pressed thereon and caused to smoothly engage the shaft and formed into a tube, the elasticity of the springs *m*, *m*^{1} permitting the rolling as may be easily understood.

The shaft *k* is fitted with a gear *o*^{1} and the rollers *n*, *n*^{1} carry gears *o* which mesh with the gear *o*^{1} in order to revolve the said rollers *n*, *n*^{1} as shown. To adjust the springs the top and bottom roller *n*, *n*^{1} may be accordingly adjusted and also rollers *n*, *n*^{1}, adjacent to the shaft may be adjusted to engage always closely the rolling shaft when the same is replaced by thicker or thinner ones for the manufacture of thicker or thinner tubes. For this purpose the standard *r* Fig. 4 is provided with vertical slots *r*^{1} in which the bearings *r*^{2} receiving the shafts *r*^{3} of the rollers *n*, *n*^{1} are introduced and adjustably secured therein by set screws *r*^{4}. Into the standard are also cut horizontal slots *s*, *s*^{1} in which are movably located the bearings *s*^{2} of the shafts *n*^{2} of the rollers *n*, *n*^{1}.

What I claim and desire to secure by Letters Patent is:

In a machine for manufacturing paper tubes the combination of a paper receiving and rolling shaft a set of upper rollers placed at the circumference of said shaft, a set of lower rollers located underneath said rollers, and a top and bottom roller arranged vertically to the said rollers, a set of coiled springs engaging the upper roller set and a set of coiled springs engaging the lower rollers all springs encircling the circumference of the paper roller and means to drive the rollers as described and for the purpose set forth.

WALTER KELLNER.

Witnesses:
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C. J. WRIGHT.