

(No Model.)

3 Sheets—Sheet 1.

R. DALTON & H. H. WILLS.

APPARATUS FOR MAKING PAPER CASES FOR INCLOSING CIGARETTES, &c.

No. 524,938.

Patented Aug. 21, 1894.

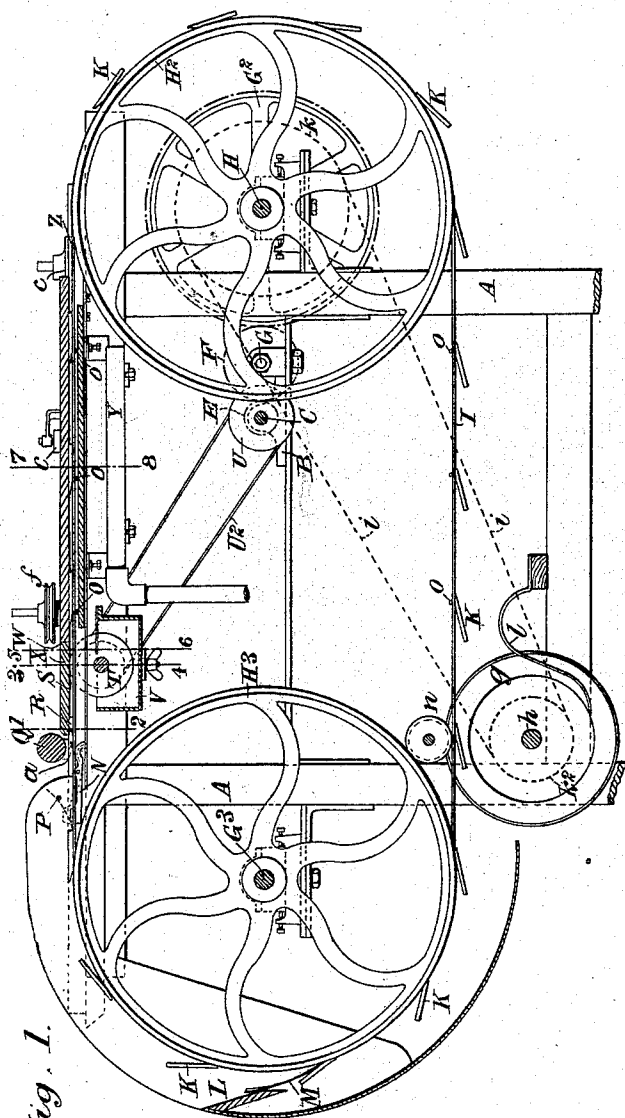


Fig. 1.

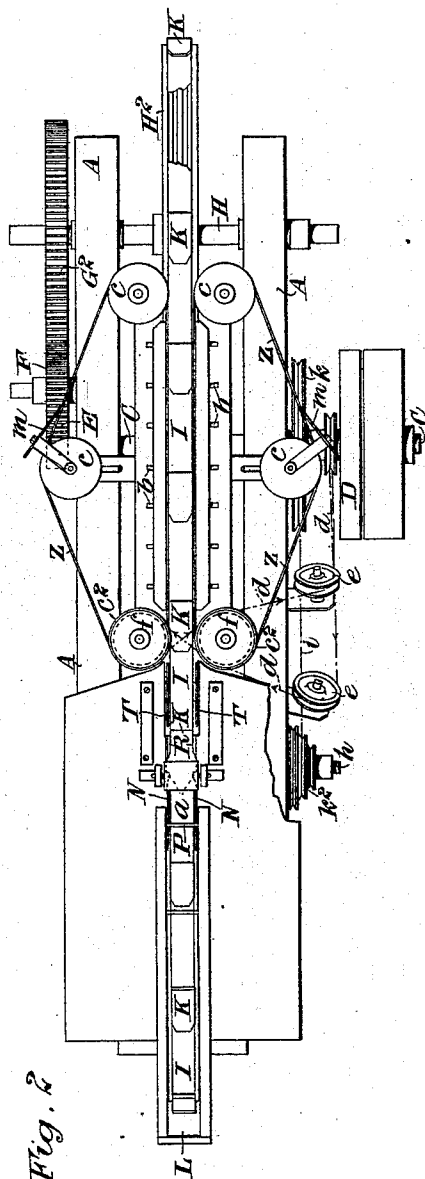


Fig. 2.

Witnesses

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Richard Dalton and
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By their Attorneys
Howson and Howson

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Fig. 3.

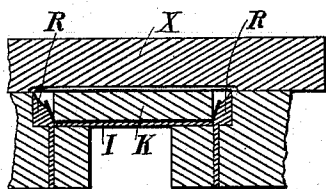


Fig. 4.

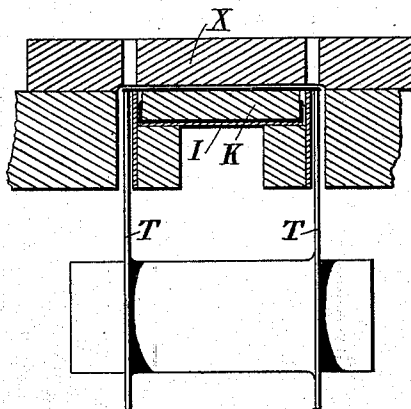


Fig. 5.

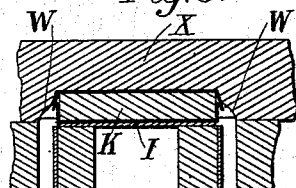


Fig. 6.

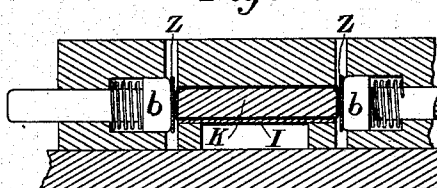


Fig. 1^a

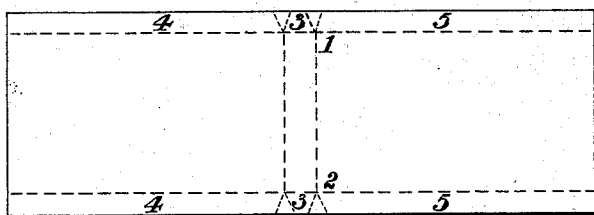
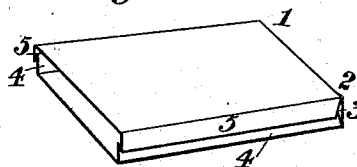


Fig. 1^b



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Fig. 7.

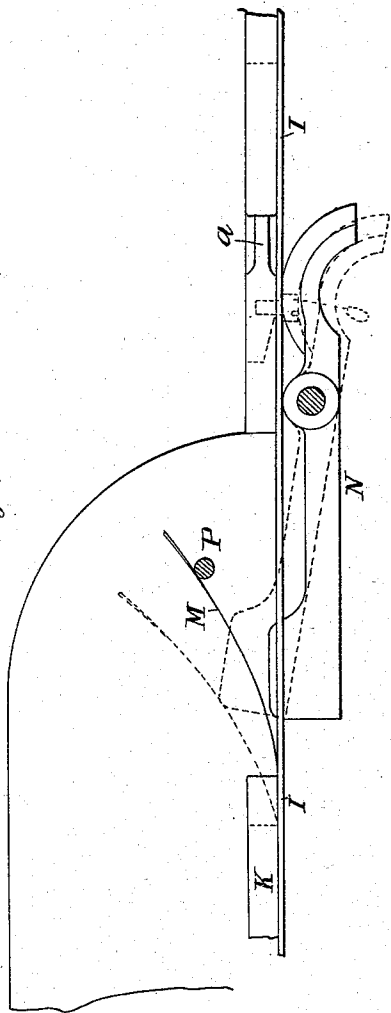
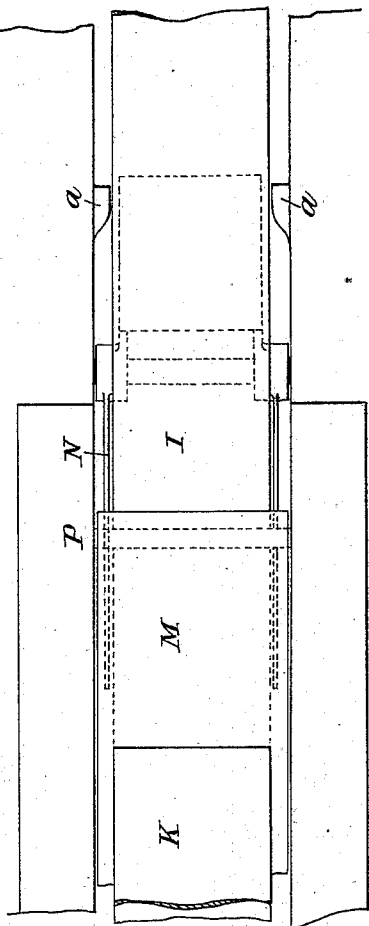


Fig. 8.



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UNITED STATES PATENT OFFICE.

RICHARD DALTON AND HENRY H. WILLS, OF BRISTOL, ENGLAND.

APPARATUS FOR MAKING PAPER CASES FOR INCLOSING CIGARETTES, &c.

SPECIFICATION forming part of Letters Patent No. 524,938, dated August 21, 1894.

Application filed May 17, 1893. Serial No. 474,495. (No model.) Patented in England January 4, 1890, No. 183.

To all whom it may concern:

Be it known that we, RICHARD DALTON and HENRY HERBERT WILLS, subjects of the Queen of Great Britain and Ireland, and both residing in the city and county of Bristol, England, have invented certain Apparatus for Making Paper Cases for Inclosing Cigarettes or other Articles, (for which we have obtained a patent in Great Britain, No. 183, dated January 4, 1890,) of which the following is a specification.

The object of this invention is to provide a simple machine which will rapidly and efficiently manufacture cases for inclosing cigarettes or other articles.

According to this invention on an endless band there are carried plates or blocks to suit the size of the interior of the case to be made. To this band paper blanks are fed either by hand in separate pieces or from a roll or continuous supply cut into proper lengths by a cutter provided on the machine so that the inner end of each blank is situated between one of the said plates or blocks and the band, the proper position of the blank being insured by a stop. As the band moves round, each blank is folded over its block by coming against a guide or folder in proximity thereto. By the further movement of the band the blanks and blocks are passed between other folders which fold down the side portions, there being in proximity to these latter folders a pasting or cementing device by which paste or cement is applied to the folded edges. As the cases thus formed and cemented are carried upon their blocks still farther they pass between bands, spring rollers or equivalent devices (preferably heated) so that the edges are held in place till the cement is dried sufficiently to enable the cases to retain their form. On the still further movement of the band the formed cases are removed from their blocks which may be done by hand or by mechanical takers-off preferably consisting of disks or rollers rotating at a higher speed than that at which the band travels so that they remove the case from the block, which block then travels forward to receive another blank and so on. The band may carry any convenient number of these blocks.

In order that the said invention may be fully understood we now proceed to describe

the best means with which we are acquainted of carrying the same into practical effect and for that purpose shall refer to the several figures on the annexed sheets of drawings the same letters and figures of reference indicating corresponding parts in all the figures.

Figure 1 is a side sectional elevation and Fig. 2 is a plan of an apparatus constructed according to this invention and Figs. 3, 4, 5 and 6 are sections taken respectively along the lines 1—2, 3—4, 5—6 and 7—8, Fig. 1, these sectional views being drawn to a larger scale to more clearly illustrate the mechanism for folding and connecting the sides of the cases. Figs. 7 and 8 are detail views. Fig. 1^a represents the blank of paper before it is folded, and Fig. 1^b the folded paper box.

A is the main frame of the apparatus carrying in bearings B the main driving shaft C which may be driven from any suitable prime mover by a strap passing round the pulley D. On the shaft C is a pinion E gearing with a spur wheel F on a stud G and transmitting motion through a spur wheel G² to a shaft H. On the shaft H is mounted a drum or pulley H² having a groove in its periphery for the reception of an endless steel band I the said band also passing round a similar drum or pulley H³ on a shaft G³ at the opposite end of the apparatus. At suitable intervals along this endless band I are loosely connected plates K upon which the paper cases are formed. The paper blanks (one of which is shown in Fig. 1^a) to form the cases are fed singly by hand or otherwise into a hopper L which conducts the blanks into position between the plates or "formers" K and the endless band as shown at M. Fig. 1, each blank as the band travels round the drum H³ being held between the said band and the "formers" with a portion projecting in front of the "former" sufficiently long to form one side and the bottom of the case. As the blank held by the "former" moves forward, the end of the overhanging portion of the blank is raised which may be done by causing it to rest on a projection from the band just in advance of the forward edge of the block but preferably by projections O on the under side of the band I acting on levers N so as to cause the end of the overhanging portion of the blank to be raised above a stationary rod or

bar P as shown in Figs. 7 and 8 and by dotted lines in Fig. 1 so that as the "former" passes beneath the said bar or rod the projecting portion of the blank is folded along the line 1—2 Fig. 1^a onto the top of the "former." The "former" with the blank thus folded thereonto passes thence beneath a roller Q which holds the blank securely on the "former" while projections *a* from opposite sides of a trough or passage S through which the "former" next passes, press inward the projecting portions 3 of the blank, on the front or advancing end of the "former," to form the corners of the bottom of the case.

At the mouth or entrance to the trough or passage S are inclines R as shown in Fig. 3 which as the "former" with the blank thereon advances turn up the projecting edges 4 of that portion of the blank which is situated between the "former" and the band I. The overhanging edges 5 of the top portion of the blank are then pasted by coming into contact with disks T (shown in Fig. 4) rotating in a trough V containing paste or other suitable cement or adhesive material. These disks receive motion from the main shaft C through the pulley U and driving band U² and as they revolve in the paste or the like they are continually coated with a film thereof which they transfer to the under surface of the overhanging edges 5 of the upper portion of the blank as they move in contact therewith. The "former" with the partly formed case thereon moving forward, the projecting pasted edges 5 of the upper portion of the blank are turned down or folded over the turned up edges 4 of the lower portion of the said blank, by inclined surfaces W formed on a piece or cover X (see Fig. 5) of the passage or trough S. This trough or passage is heated from below by means of a gas burner Y as shown, or by any other convenient means so that as the "formers" with the cases thereon pass through this passage the paste by which the parts are connected are thoroughly dried, and to insure the pasted parts being held in contact while passing through the trough or passage, endless bands Z are arranged to travel edge-wise on opposite sides of the trough and are pressed against the sides of the cases on the "formers" by plungers *b* acted on by springs as shown in Fig. 6. The bands Z are carried on pulleys *c* *c*² which are driven by a gut or band *d* passing round pulleys *e* on the frame A and pulleys *f* connected with the pulleys *c*². To prevent adhesion in case of any paste or gum having escaped to the surface of the bands Z it is preferred to drive the said bands at a speed slightly different from that at which the cases and blocks are traveling. The "formers" with the cases thereon as they pass from the trough or passage S pass round the drum H² and enter thence between two disks *g* mounted on a shaft *h*. These disks are faced with or have attached to their inner sides, surfaces of india rubber or equivalent material against which the edges of the

cases are caused to bear when passing between them and as these disks are caused to travel or rotate at a considerably greater speed than the band I they drag the cases off the "formers" as they pass between them and deposit them into a receptacle placed in position below to receive them a stationary spring blade *l* being arranged between the disks to detach the cases therefrom. Fig. 1^b shows in perspective a finished case.

The disks *g* may be driven at the required speed from any suitable part of the machine or from any other available source; in the drawings they are shown as being driven from the shaft H by a gut or band *i* passing round a pulley *k* on the said shaft and round a cone pulley *k*² on the shaft carrying the disks.

m are scrapers for removing any paste that may get onto the bands Z.

n is a grooved roller situated between the disks *g* to guide the band I between the said disks to insure the cases being removed from the "formers."

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In apparatus for making cases for inclosing cigarettes or other articles, the combination of an endless traveling band carrying formers to suit the size of the interior of the cases to be made, with means substantially as described, for first folding the blanks over the formers to form the seamless bottom and means substantially as described for then turning in the ends of the bottom and folding over each other the edges of the two seams at the opposite sides of the case, and pasting devices for the said edges, substantially as set forth.

2. In an apparatus for making cases for inclosing cigarettes or other articles, the combination of an endless traveling band carrying formers, a frame provided with a trough through which the formers are adapted to pass, the sides of the said trough being provided with stationary projections and inclines substantially as described to fold the blanks on the formers to form the seamless bottom, turn in the ends of the folded bottom and then fold over each other the two seams of the opposite sides of the case.

3. In apparatus for making cases for inclosing cigarettes or other articles, the combination of an endless traveling band carrying formers, with disks *g* between which the formers with the cases thereon travel and by which the cases are removed from the formers, substantially as described.

4. In apparatus for making paper cases for inclosing cigarettes or other articles, the combination of an endless band carrying formers, with the lever or levers N and bar P for raising the end of each blank and folding it over its former, substantially as described.

5. In an apparatus for the purpose hereinbefore described the combination of the end-

less band carrying formers K, means for folding the loose ends of the blanks over the formers, projections *a* for turning in the ends of the bottom of the case, inclined surfaces R and W for turning over the edges of the blank and means for pasting the turned over edges, substantially as hereinbefore described.

6. In apparatus for the purpose hereinbefore described, the combination of the endless band carrying formers K, means for folding the blanks over the formers, inclined surfaces R and W for turning over the edges of the blanks, a pasting device for pasting the edges, bands Z and spring plungers *b* for pressing against the turned and pasted edges of the

blanks while they are passing through a heated channel or passage, substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

RICHARD DALTON.
H. H. WILLS.

Witnesses:

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LIONEL A. WILSON,
Clerk with Messrs. Clarke & Sons, Solicitors, Bristol.