

D. WEIL.
CIGARETTE MANUFACTURING MACHINE.
APPLICATION FILED FEB. 1, 1908.

966,279.

Patented Aug. 2, 1910.

3 SHEETS—SHEET 1.

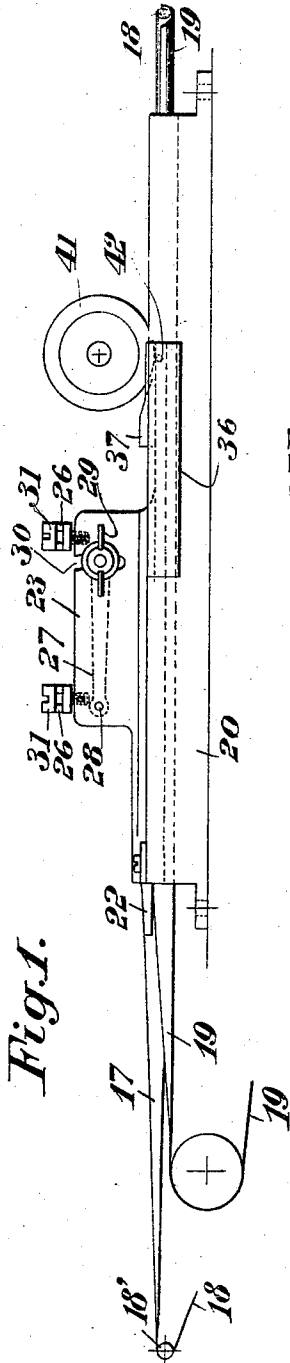


Fig. 1.

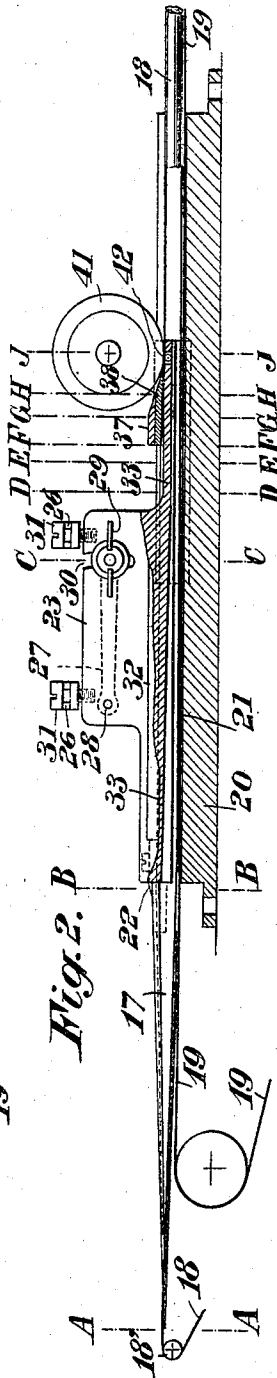


Fig. 2. B

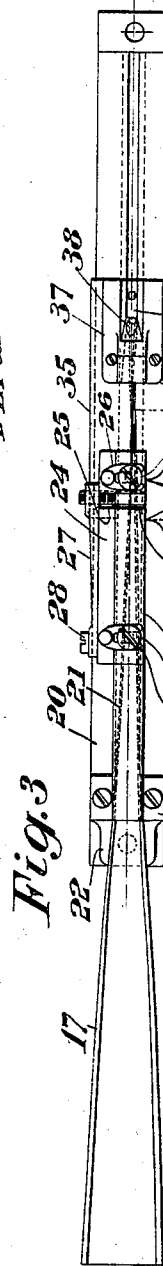


Fig. 3

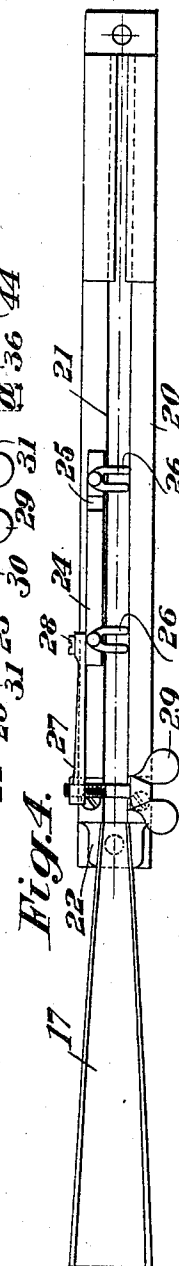


Fig. 4.

Witnesses:

M. Ruebush
Myron A. Clear

Inventor:

Daniel Weil
By B. Singer Attorney

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3 SHEETS—SHEET 2.

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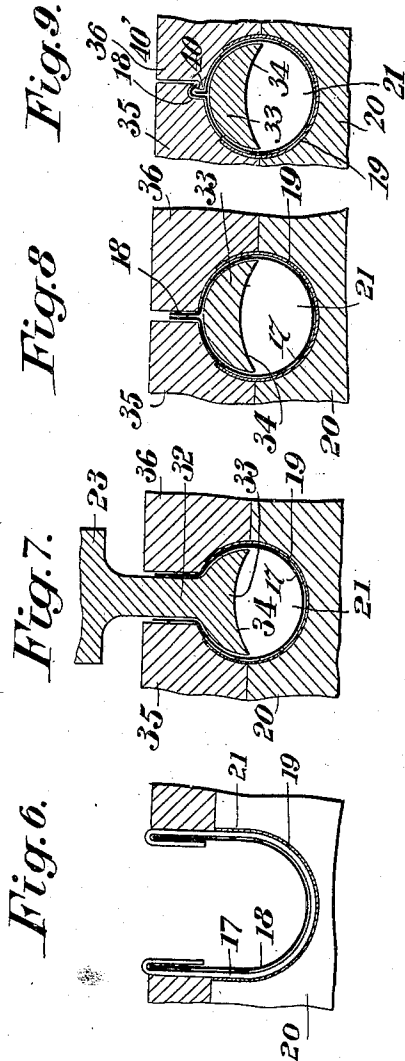
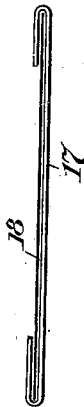


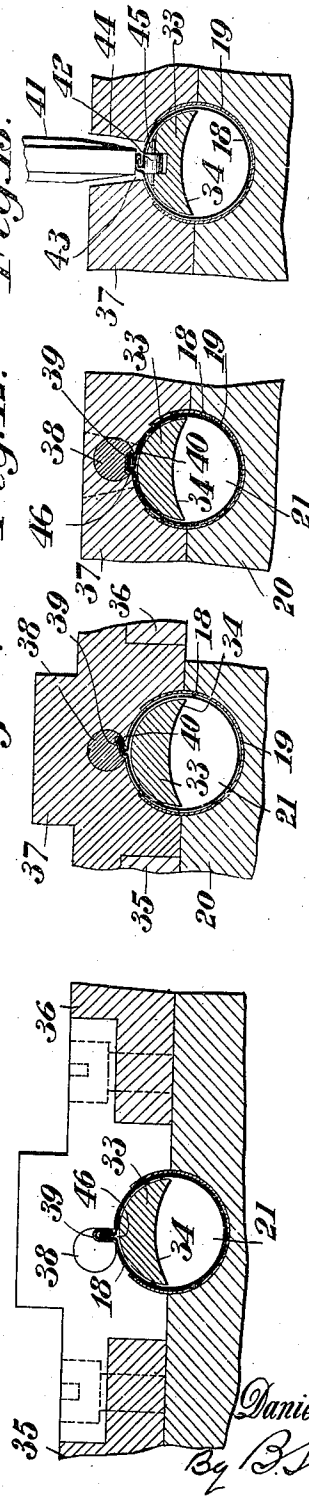
Fig. 5.



Witnesses:

M. Ruckh
Myron S. Clear

Fig. 10.
Fig. 11.
Fig. 12.
Fig. 13.



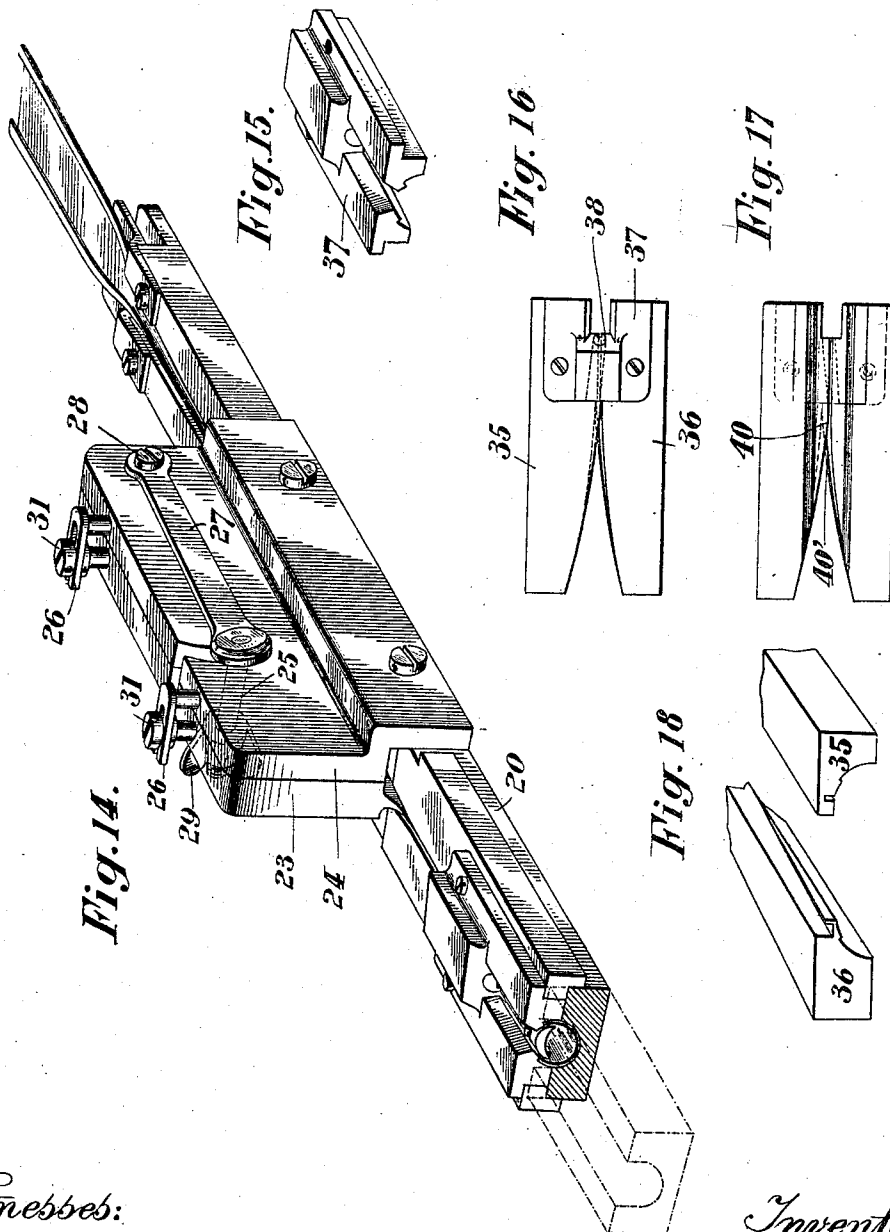
Inventor:
Daniel Weil.
By B. Singer
Attorney.

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3 SHEETS—SHEET 3.



Witnesses:

C. M. Crawford
C. Schellinger

Inventor:

Daniel Weil.
by B. L. Lipp Attorney

UNITED STATES PATENT OFFICE.

DANIEL WEIL, OF PARIS, FRANCE.

CIGARETTE-MANUFACTURING MACHINE.

966,279.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed February 1, 1908. Serial No. 413,863.

To all whom it may concern:

Be it known that I, DANIEL WEIL, a citizen of the French Republic, and resident of Paris, France, have invented certain new and useful Improvements in and Relating to Cigarette-Manufacturing Machines, of which the following is a specification.

The present invention relates to improvements made in cigarette manufacturing machines and especially comprises: the cigarette forming mechanism and a device intended to produce the closure of the paper wrapper of the cigarettes by folding and clasp together the two borders or edges of the paper, in cigarette machines or in machines for manufacturing paper tubes.

In the annexed drawing, given by way of example: Figure 1 is a side elevation of a part of a cigarette manufacturing machine provided with the folding and clasp device which forms a part of the present invention. Fig. 2 is a longitudinal section of same on its axial line. Fig. 3 is a plan view of same; the strip of paper and the guide strip or ribbon being removed. Fig. 4 shows a similar view the upper part of the apparatus being removed. Figs. 5 to 13 included show at an enlarged scale cross sections on lines A—A, B—B, C—C, D—D, E—E, F—F, G—G, H—H, J—J respectively of Fig. 2. Fig. 14 is a perspective view of the device assembled. Figs. 15 to 18 are detail views of the folding members.

The Figs. 1 to 13 show by way of indicative but by no means limitative example, the application of the folding and clasp device which forms the subject matter of the present invention, to a cigarette manufacturing machine producing a continuous string *i. e.* to a machine wherein the tobacco is converted into a continuous string which in proportion of its formation is wrapped into a wrapper formed by a strip of paper and progressing at the same time as the tobacco string, with a continuous motion so as to form an endless cigarette which is then cut on the machine itself into pieces having a suitable length.

The apparatus comprises essentially a metallic guide 17 in which passes the paper strip 18 which takes in the guide 17 progressively the bent form shown by the Figs. 5 and 6. The said paper strip is carried on by the endless band 19 which engages it after it has left the guide 17 and accompanies it afterward during its passage

through the members of the device which are to act subsequently upon it. The guide 17 is continued by a piece 20 made of steel or any other suitable material which is provided with a longitudinal groove 21 having a semi-circular bottom. The guide 17 is secured to the piece 20 by means of the members 22. The upper part of the member 20 is closed by a steel piece 23 which although rigidly connected thereto is adapted to be rapidly taken away. To this end the member 20 has at its upper surface an extension 24 in which is arranged a notch 25; the said extension also carries two stirrups 26. The member 23 is applied against the extension 24 and is adapted to be instantaneously secured thereto by means of a lever 27 adapted to oscillate on a pivot screw 28 and carrying a screw provided with a winged head 29, the lever 27 being adapted to be swung down so that the screw 29 engages a notch 30 arranged in the member 23, and the notch 25 wherein it may be secured by means of its winged head; besides the screws 31 secured to the top of the member 23 are engaged during the fixing operation of the latter by the two corresponding stirrups 39 which take between two shoulders provided on the said screws. The member 23 carries at its lower face an extension 32 which is terminated by a prolonged member or heel 33; the extension being reduced in thickness toward the front end so as to form at the latter a kind of cutting edges. The heel 33 which carries on the whole width of its bottom or lower surface a longitudinal groove 34 forms with the member 20 which is hollowed at 21, a duct intended to leave passage to the tobacco and constituting what might be called the forming tube of the apparatus.

With the heel 33 of the member 23 co-operates the folding and clasp member proper which is formed by the longitudinal guides 35, 36 arranged respectively at the left and the right hand side of the heel 33 and having the special section shown by the Figs. 8, 9 and 10 so as to act to press down the cigarette paper and to fold it (Fig. 9) with a view of the clasp operation after having gradually approached to each other the two borders of the paper 18 (Fig. 7), and finally put them into contact with each other (Fig. 8). To this end the part 36 is provided with a longitudinal projection 40 and its lateral surface directed toward the

member 35. This projection when seen from the top, has the form of a wedge placed upright and the nascent part of which is directed toward the direction in which the cigarette paper arrives, as may be seen by reference to Fig. 18. This projection having a slightly concave surface, engages itself under the edge of the member 35 which carries at this place and on the said distance a groove 40' intended to fold the left hand border of the paper upon the right hand one, which has remained rectilinear owing to the presence of the projection 40 as it will be exposed farther on. The guides 35, 36 carry at their front end a sort of a closing cap or hood 37 which is provided with a hole the axis wherefrom forms as clearly shown by the Figs. 3, 10, 11 and 12, a certain angle with the longitudinal axis of the apparatus. In the said hole which may be cylindrical or conical and have any suitable action, is engaged a rod 38 which is secured into the closing cap 37 and is provided with a groove or hollow 39 which has a helicoidal form and turns a quarter of a helicoidal turn around the rod 38. This groove at its beginning *i. e.* at the front end of the said rod 38 (Fig. 10) has a vertical position and assumes at the opposite end of the said rod (Fig. 12) in a horizontal position. The hollow formed between the surface of the groove 39 and the wall of the inclined hole pierced into the closing cap 37, communicates with the inside of the forming tube by a longitudinal slot 46 provided in the lower part or face of the cap 37 and in which passes the cigarette paper 18. Finally, at the escape end of the clasp and pressing down device formed by the members 35, 36, 37, 38, 40 and the member 23 with the heel 33 is arranged a system of milled rollers 41, 42 intended to press between them the bent over part of the cigarette paper tube 18 and to consolidate in this manner the clasp or closure of the said paper tube. The milled roller 41 is situated at the outside of the heel 33 and works in a slot or opening 44 arranged to this effect in the closing cap or hood 37 (Figs. 2, 3 and 13). It performs a rotary motion the peripheral speed of which is in relation with the advancing motion of the paper. The milled roller 42 is contained in the body part of the member 33 and rotates on a fixed shaft 45 the rotation of the milled roller being produced by the rotary motion of the milled roller 41 which carries it on.

The function of this device is as follows:—The continuous tobacco string produced by the compressing device (not shown) of the cigarette manufacturing machine, arrives at 18' on the cigarette paper 18, which, carried on by the motion of the endless band 19 passes with this string in the guide 17 the form of which forces the two

edges of the cigarette paper to place themselves progressively around the tobacco which is thus carried on into the forming tube composed of the members 20 and 23 into which the band 19 penetrates together with the cigarette paper which it partially surrounds. The edges of the cigarette paper 18 pass then together with the band 19 at both sides of the heel 33 in the free space provided in the latter between the latter and the member 20 as clearly shown by Fig. 7. The cigarette paper then continues wrapping itself around the tobacco and the heel 33 until its two vertical edges come into contact with each other (Fig. 8), as in this part, the heel 33 freely projects on a certain length and forms a tongue which extends about from the sectional line D—D to the sectional line J—J (Fig. 2). The guide members 35, 36 due to their special form press down and fold the paper (Fig. 9). As a matter of fact, in the position shown by Fig. 9 the two edges of the paper strip are shifted to the left from the axis of the groove; it results therefrom that the left hand border overlaps on a certain height the right hand border which owing to this fact has become shorter, and may be folded on this right hand border due to the special form of the upper wall of the groove of the member 35. It will be readily understood from the foregoing description that the object of the projection 40 is to push toward the left, the right hand border of the paper strip. During the further advancing motion of the cigarette thus being formed, the two edges of the paper 18 thus partially engaged one into the other arrive at the closing cap 37 and penetrate into the helicoidal groove 39 of the rod 38 (Figs. 10–12) where the already folded part of the paper and the rectilinear part of the latter are folded down by the torsion of the helicoidal groove and the lowering of its surface, which first was vertical (Fig. 10) into a horizontal plane (Fig. 12) so that the said two parts are finally folded down upon the body of the cigarette thus forming a perfect clasp. This clasp is then tightened during its passage between the two milled rollers 41, 42 which are provided on their peripheries with small teeth or flutings which impress themselves into the cigarette paper so as to consolidate the clasp in the well known manner.

It will be observed that in the foregoing description members have been mentioned which are already well known and which do not form any part of the present invention; they have only been mentioned in order to render the specification clear. It is consequently understood that the invention only refers to those members which as it has been clearly indicated hereinbefore have for their special object the closing of the paper wrap-

per of the cigarettes this closing being effected by folding and clasping the edge of the paper into one another. Besides, it is needless to state the same device can be in an analogous manner applied for manufacturing hollow tubes, in machines for manufacturing paper tubes. Finally it is well understood that the invention is not strictly limited to precise structural and mounting or connecting devices shown in the drawing as it is evident that it would be possible to apply to the structural details many modifications suggested by the practice and easily found out by those skilled in the art, without departing from the spirit or scope of the invention.

Having now fully described my said invention, what I claim and desire to secure by Letters Patent, is:—

1. In a tube making machine and especially in a cigarette making machine the combination of a pair of guiding members for the material, said members being provided with mutually coacting portions for folding one longitudinal edge of the material against the other longitudinal edge thereof when the same is advanced, a closing cap in superposition with said first named pair of members, a rod rigidly inserted in said closing cap, the axis of said rod being

disposed in an angle with respect to the traveling direction of the material and said rod being provided with a helical groove adapted to engage the folded edges of the material and lay the same flat against the wall of the tubing when the material is advanced.

2. In a tube making machine and especially in a cigarette making machine the combination of a trough-shaped guiding member for the material, an element provided with a heel portion, projecting longitudinally into said trough and adapted to inclose a tubular space in coaction therewith, an extension on said guiding member, means for securing said element laterally to said extension, said element and said extension being provided with registering notches, a lever pivotally mounted on said extension, and a transverse portion on said lever adapted to enter in said notches and hold the same in registering position with respect to each other.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

DANIEL WEIL.

Witnesses:

HANSON C. COXE,
JAC. R. H. BAKER.