No. 870,623. PATENTED NOV. 12, 1907.

A. GODFREY.

APPARATUS FOR WRAPPING CIGARETTES WITH TIN FOIL OR THE LIKE.

APPLICATION FILED MAY 2, 1905.

3 SHEETS—SHEET 1.

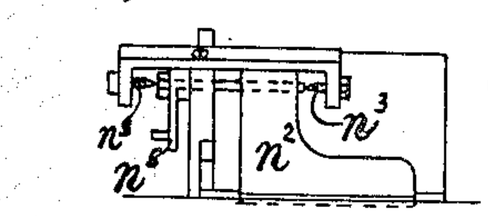

Fig. 1a.

Fig. 1.

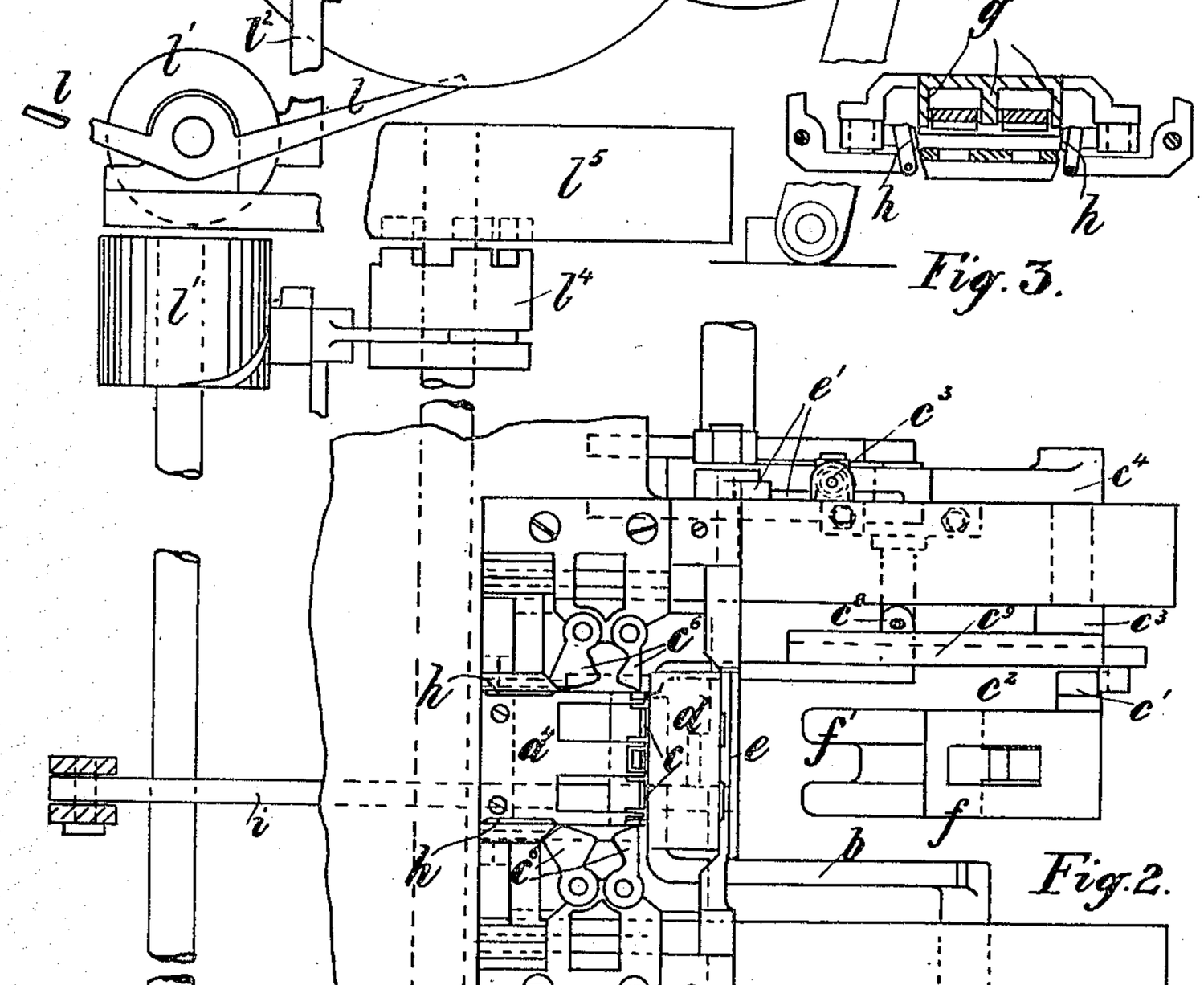

Fig. 3.

Fig. 2.

Witnesses
Wm. Fuchs
John A. Percival.

Inventor
Alfred Godfrey
By Richards & Co
Attorneys

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3 SHEETS—SHEET 2.

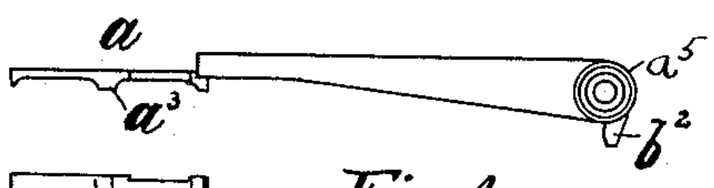


Fig. 4.

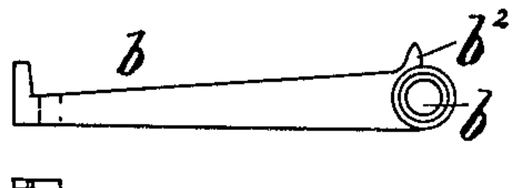
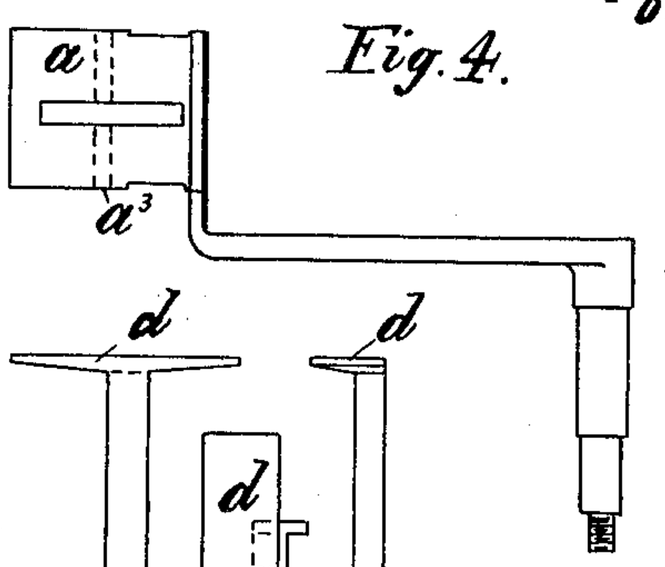


Fig. 5.



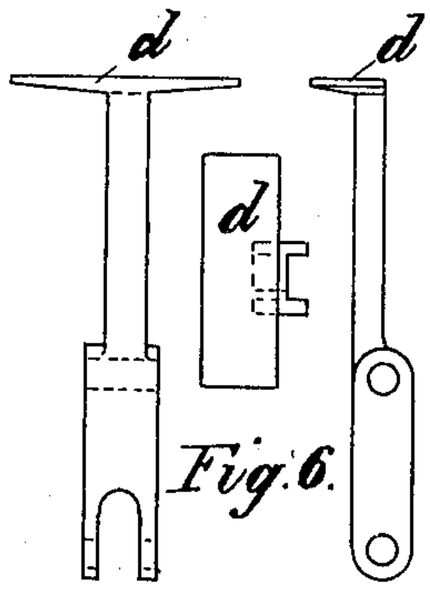


Fig. 6.

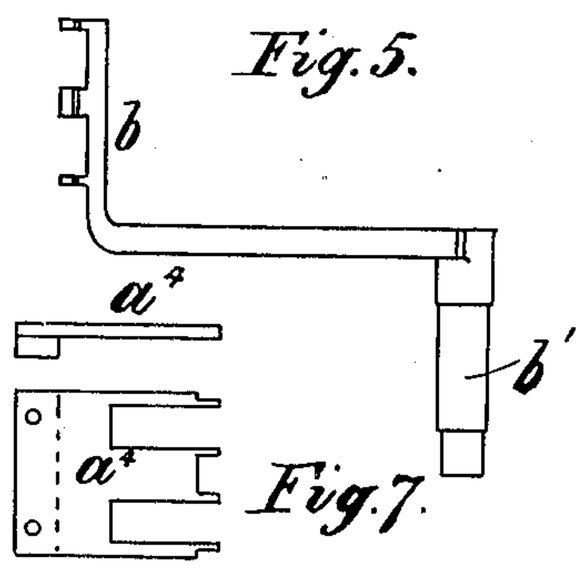


Fig. 7.

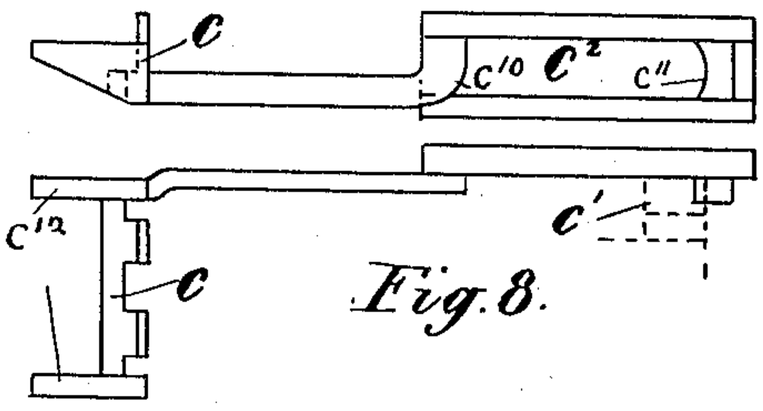


Fig. 8.

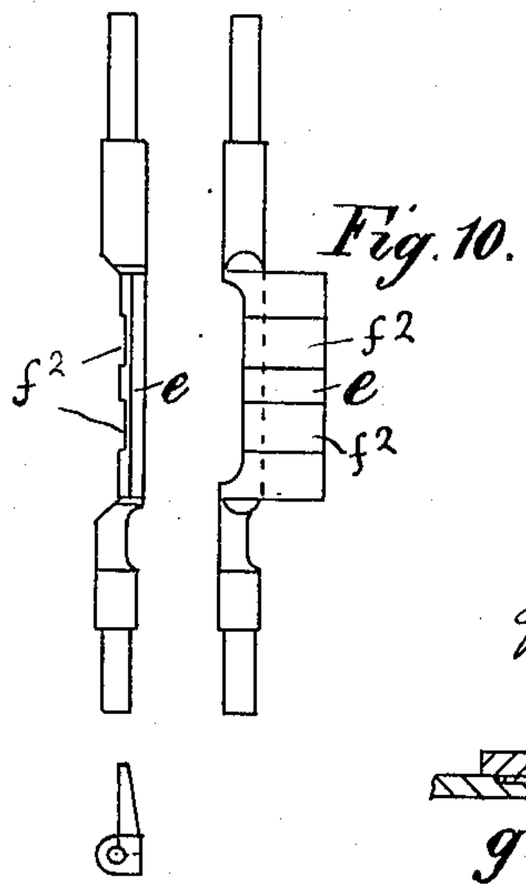


Fig. 10.

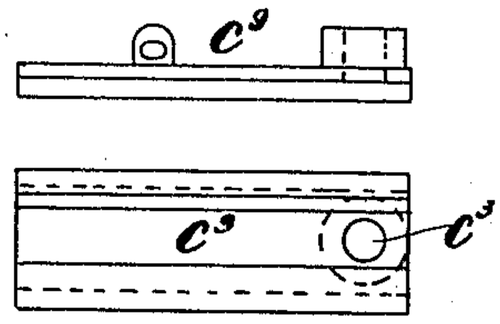


Fig. 9.

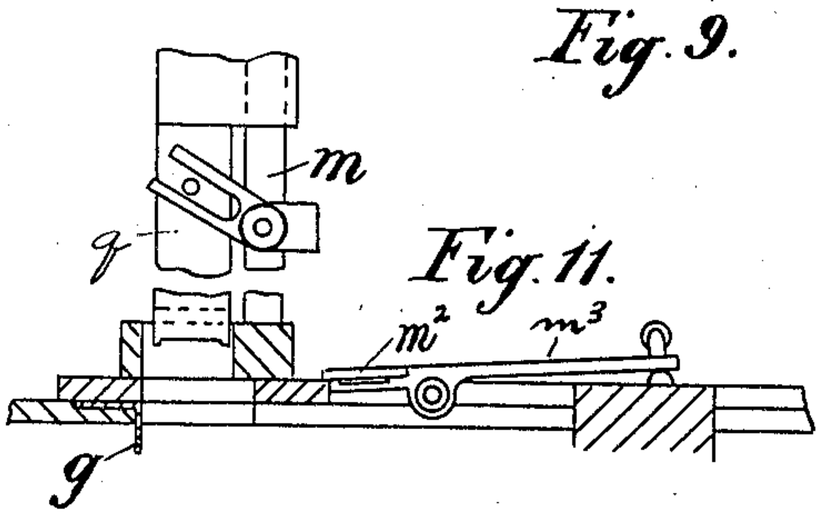


Fig. 11.

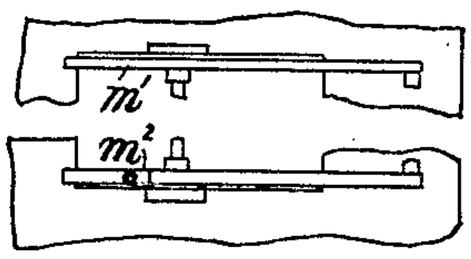


Fig. 12.

Witnesses
Wm. Kuehne
John A. Percival.

Inventor
Alfred Godfrey
By Richards & Co
Attorneys

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A. GODFREY.

APPARATUS FOR WRAPPING CIGARETTES WITH TIN FOIL OR THE LIKE.

APPLICATION FILED MAY 2, 1905.

3 SHEETS—SHEET 3.

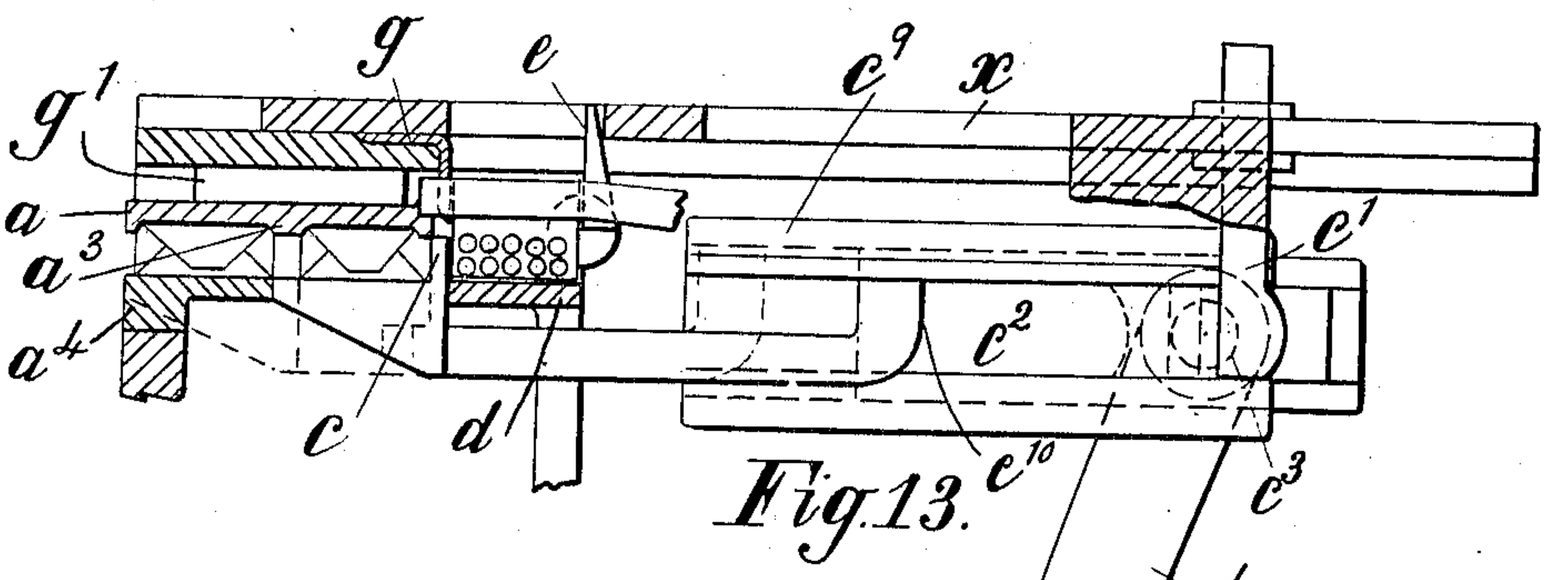

Fig. 13.

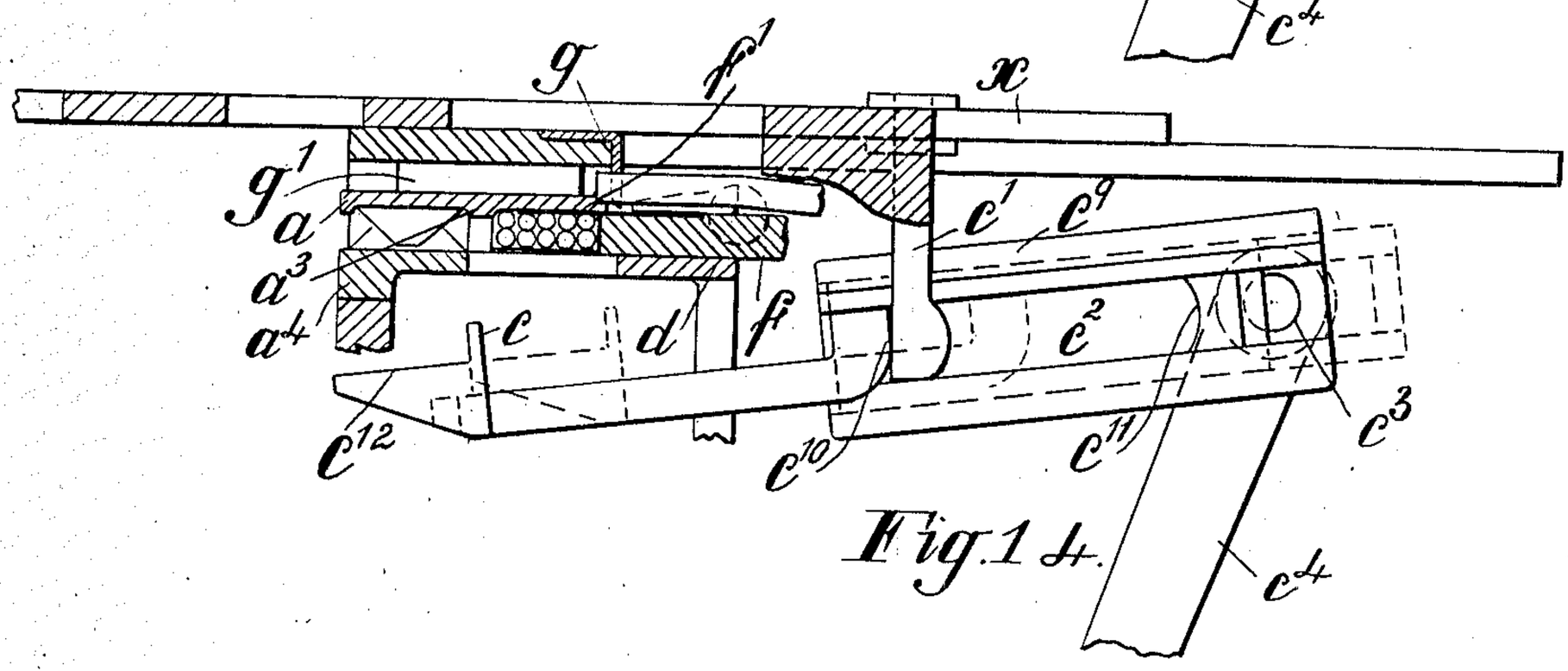

Fig. 14.

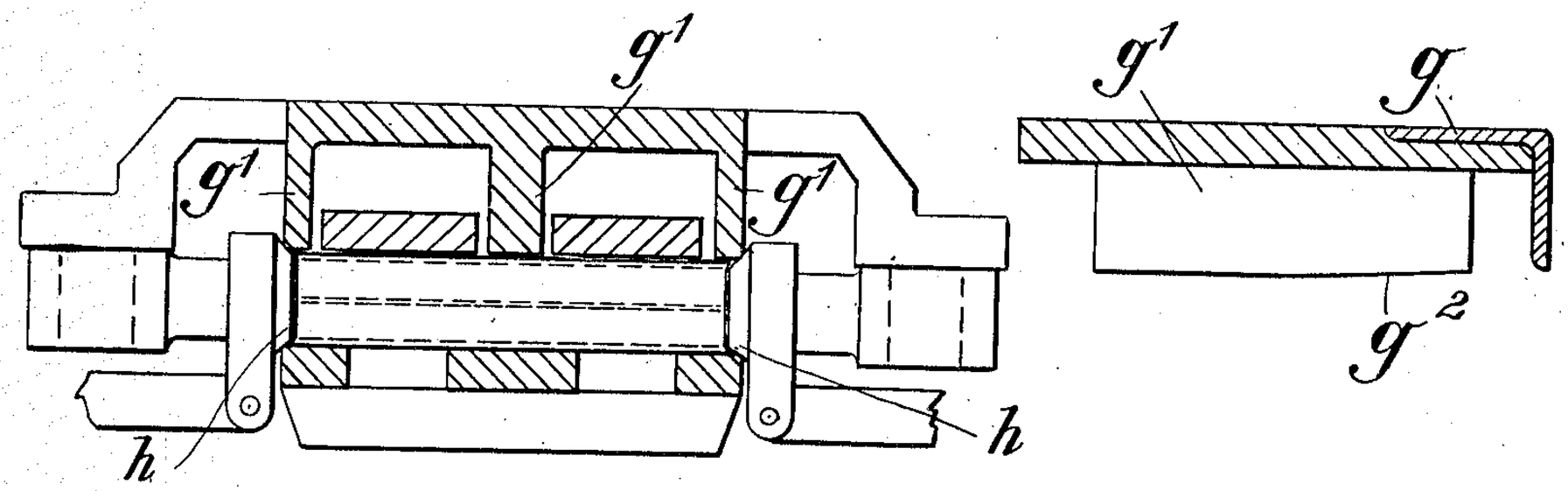

Fig. 15.

WITNESSES

W. P. Burke

W. J. Thomas

INVENTOR

Alfred Godfrey

By Richardson & Co.

ATTYS.

UNITED STATES PATENT OFFICE.

ALFRED GODFREY, OF LONDON, ENGLAND.

APPARATUS FOR WRAPPING CIGARETTES WITH TIN-FOIL OR THE LIKE.

No. 870,623. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed May 2, 1905. Serial No. 258,523.

To all whom it may concern:

Be it known that I, ALFRED GODFREY, a subject of the King of Great Britain and Ireland, residing at Wood Green, London, England, have invented a new and useful Improvement in Apparatus for Wrapping Cigarettes with Tin-Foil or the Like, of which the following is a specification.

This invention relates to apparatus for wrapping packages of cigarettes or similar goods in tin foil and the like, and consists in improvements in various parts of the apparatus as patented to me under No. 770427 and dated the 20th September 1904 by which improvements the apparatus is better adapted to accurately fold the package without disturbance of the layers of cigarettes therein, to deal with cigarettes either wet or dry and of even slight variation in thickness, to smoothly fold tin foil or like covering material of varying resilience, to nip and definitely crease the edges of packages, to avoid all dangers from tobacco dust and to be more quickly started and stopped.

In the apparatus as patented to me under No. 770427 of 1904, the packages, after a first and second fold of the tin foil as they passed into a matrix through a die plate under a plunger and upon a reciprocating table, received a third fold, and the end folds were given in a rigid horizontal tunnel, the entering upper edge of which made the third fold, and the packages ejected each other as they were successively pushed into the tunnel by a horizontal pusher.

By my present improvement, I provide a lifting and descending roof to the said horizontal tunnel, operated by a cam and pivoted lever, and the said roof may be provided with transverse gage ribs, so as to insure compact packing and a definitely shaped corner to the packets, while, in conjunction with an under lifting and dropping pusher they practically at all times hold and move each package individually during its passage through the tunnel and also form a portion of the matrix. The lifting and dropping under pusher is operated, with a lost motion of rest at each end of its stroke, by a stud upon a pushing plunger as described in the specification to the said Letters Patent No. 770427 of 1904 and receives the required drop at one end of its stroke and a lift at the other by a cam and lever. The vertical fingers of the said under pusher, when at the end of the stroke towards the matrix, form a door or barrier at the mouth of the horizontal tunnel forming thus one side of the matrix.

To effect the third fold on the cigarette package as it passes from the matrix, a depending steel shield is provided, not quite down to the ultimate level of the top of the package, to allow any irregularly shaped cigarette to pass under it, thus forming only a loose fold. Behind this, and to complete a tighter fold, a fixed plate is provided above the moving roof of the tunnel, from which depend a series of narrow tongues passing through the moving roof of the tunnel, the tongues being of so narrow a width, that when pressing down the foil to the required size of package, an irregularly shaped cigarette will pass under such fixed tongues without tending to be rolled up upon its neighbor. The moving roof, before mentioned, then descends upon the top of the packages smoothing all irregularities and holding the package against the withdrawal of the receding pusher plunger, and further in conjunction with the lower pusher, holds the package, while the end folds are made by the mechanism as described in the specification to Letters Patent No. 770427 of 1904.

I also provide a rising and falling lever, operated simultaneously with the rising and falling roof of the tunnel, which carries fingers forming, when the bottom lever has risen to the top of its travel, a door to the entrance to the tunnel, after a package of cigarettes has been pushed into it. Should therefore there be any loose cigarettes in the tunnel, by reason of the absence of the foil or otherwise, they are prevented from falling back into the matrix, but must pass on to the discharge. The pivoting flap described in the said specification for making the second fold over the package when at the bottom of the matrix, is now extended to reach over the whole layer of cigarettes to insure a flat upper surface to the package, and to put back into position any cigarettes that may have risen, and this flap may be operated by a separate cam motion from the operating shaft. Where the foil is resilient, or lined with tissue paper, or requires a forcible nip to maintain its folded position, I can now effect a forcible nip without the fouling of the package in the tunnel by reason of the rising and descending roof. I therefore for this purpose, cause the end folders which have cup-shaped projections to come home upon the edges of the roof of the tunnel and the base, and thus obtain a nip or raised edge on the foil along the edges of the ends of the packages, which makes a permanent fold, and serves to bind together the upper and lower folded flaps.

To avoid the danger of the accumulation of dust on or among the working parts, I support the under platform of the matrix upon the ends of horizontal parallel bars, and thus, without fixed sliding ways as heretofore, the said parallel vibrating bars serve to maintain the vertical motion of the ascending and descending table, when operated by a cam, and offer no sliding surfaces or parts in which tobacco dust can lodge. Further, I arrange all the end folding mechanism and levers upon standards in a deep box, forming a shallow tray at the bottom, but otherwise open at the sides. The end folding mechanism cannot thus be jammed or interfered with by any accumulation of tobacco dust, which falls freely into the shallow tray of the box. It

has been found important also that the operator while handling the foil, should be able to quickly and rapidly stop and start the mechanism at any time, while the hands are left free to handle the foil. This I effect by providing a pedal conveniently situated for the foot of the operator. The pedal is adapted so as to operate a stopping and starting mechanism. Conveniently I may use a clutch for the purpose, between the driving pulley and the main driving shaft of the machine.

The loading chamber under the packing plunger is, in this machine, open to the observation of the operator by placing the guide for the plunger at the back of the plunger relatively to the operator. And in order that my invention may be the better understood, I now proceed to describe the same, reference being had to the drawings hereto attached and to the letters and figures marked thereon.

Figure 1 is a sectional detail of the machine showing the new arrangements as to the tunnel. Fig. 1^a is a front view of the metallic feed board. Fig. 2 is a plan of the tunnel with the upper part removed showing the under fixed face. Fig. 3 is a transverse section through the tunnel. Fig. 4 is a detail view in elevation and plan of the tunnel roof. Fig. 5 is an elevation and plan of the under tunnel bar. Fig. 6 is an elevation, plan, and an end view of the under platform of the matrix. Fig. 7 is an elevation and plan of the fixed floor of the tunnel. Fig. 8 is an elevation and plan of the sliding under pusher, while Fig. 9 is an elevation, plan and end elevation of the rocking segment carrying the above pusher. Fig. 10 is an elevation, plan and end view of the flapper at the top edge of the tunnel. Fig. 11 shows a vertical section of the plunger and feed gripper of the machine. Fig. 12 shows a plan of the feed gripper. Fig. 13 is an enlarged view of the horizontal tunnel with the lever c shown therewith. Fig. 14 is another similar view showing the cigarette packet moved on one space. Fig. 15 is a sectional view through the tunnel with the cup projections shown as making ridges upon the envelop.

To obtain a definite feed of the foil towards the matrix I apply a special feed clamp. The metallic feed board p operated by the lever n and the cam n^1 is fitted so that the clamp n^2 rests upon the foil by reason of its own weight. It operates as follows:—The clamp n^3 is mounted on the feed board p by centers n^3 and as the feed board p is lifted by the lever n and the cam n^1 the finger n^4 fixed to the framing lifts the clamp by pressing upon the crank lever n^5 so that the clamp is held up in this position to enable the foil to get under it. As the feed board is lowered the clamp n^2 is permitted to fall so as to press upon the tin foil by its weight, so as to prevent the foil continuing to slide down, and the gripper m^3 Fig. 11 of the feed board then seizes and draws it through against the resistance of the weight of the clamp.

By the present improvements, a is the lifting and descending roof to the said horizontal race or tunnel with a fixed under plate a^4 and lifts by a cam a^1 and a lever a^2. At the same time an under door or barrier b pivots on the center b^1 and has a tooth gear b^2 at the center of movement which causes them to open simultaneously in unison, against the reaction of a spring a^5, (Fig. 4). The upper roof to the said horizontal race or tunnel has projecting under shoulders a^3 which are so placed that they hold each package as it enters the said tunnel, thus enabling the said packets to be held and to receive a definitely shaped corner to the same.

The under formed pusher c at its first position, when it rises, (Fig. 13) forms a barrier or door at the mouth of the race. A fresh charge of cigarettes has been pressed under the plunger upon a tin foil as per the description in No. 770427 of 1904. The plunger q, (Fig. 11), descends together with the table d the latter being relieved by the cam d^1 so that it may fall together with the main plunger. The cigarettes are thus enfolded in the tin foil with the two sides perpendicularly upstanding on the sides of the matrix.

The gripper as described in No. 770427 of 1904 has one end m' made solid while the other end m^2 terminates in a spring. In case of particles of tobacco or other material upon the tin foil, if these particles come under the solid end, the gripper holds by the spring, and vice versa if the particles are under the spring side, the said spring yields and allows the solid side to come down on to the foil.

A hinged plate e stands upright by the side of the matrix and is caused to fall over the packet, by levers e^1 and a cam e^2, which causes the upright flap to be bent down over the packet making a second fold. It rises again under the recoil of a suitable spring e^3. The width of this plate is sufficient to nearly reach over the whole extent of the packet to insure a flat upper surface and to put back into position any cigarettes that may have risen. The height of this plate is sufficient to bring it up to the top of the sliding die plate. It is therefore moved by a separate mechanism rather than as heretofore by the horizontal moving die plate x. The pusher f pushed as described in No. 770427 of 1904 by the traveling die plate x is now pushed forward causing the narrow steel fingers f^1 to enter over the surface of the packet and under recesses f^2, (Fig. 10) in the upper flap e when this latter is pressed down.

A depending steel shield g, see Figs. 1 and 15, is provided on the side of the matrix causing the third fold of the cigarettes as it is forced under this shield. This shield is not quite down to the ultimate level of the package, which will allow any irregularly shaped cigarette to pass under it, thus forming only a loose fold in the upper tin foil.

The under pusher c as shown in Fig. 13 stands with its upright tongue forming one side of the matrix. From this point it is pushed along horizontally, the roof a being lifted by a cam a^1 and the lever a^2. If there is a second case before the present one, it pushes this second packet towards the out-flow. This movement of c is produced by a stud c^1 engaged in the traveling die plate x which moves by the cam r and the lever S and after some lost motion in the recess c^2 strikes the front end c^{10} of the bar c bringing it forward and through the space of one packet. During this time the plunger f carrying the steel fingers f^1 presses on the first closed packet to follow the bar c. At this point the sustaining bar c^9 is allowed to drop round the center c^3 by the lever c^4 and the cam c^5 as shown in Fig. 14. Upon the return of the sliding die plate x while the bar c is held below the position of the packets, the stud c^1 eventually strikes back against the end c^{11} of the sliding bar c^2 which brings this bar towards its first original position as shown in dotted lines Fig. 14. The sustaining

bracket c^9 is here lifted up by the lever c^4 and the cam c^5 bringing up the bar c to its first position as shown in Fig. 13. This pusher c has two side projections c^{12} c^{12} which as they come under the partly open ends of the packets in its first moved position, receive a blow from the cam by means of the detent c^7 causing them to rise up to the unfolded ends by the action of the spring c^8 and thus to press them home upon the side tuckers c^6 and so complete the bottom fold.

As the roof a falls upon the packet the under guard b rises by the interaction of the cog-teeth b^2 so as to remain at the entrance to the tunnel, which thus prevents any loose cigarettes from falling back into the matrix in case a sheet of foil has not been introduced under the cigarettes when they enter the matrix. The under pusher c now pushes the cigarette packet forward to the next position the roof a being lifted and the side folds being folded by the side levers as per the description in No. 770427 of 1904. The cigarette packet being held in the next position in the race by the next descent of the roof a, the side folds are closed by the upward thrust upon them of the tuckers as per the description in the said Patent No. 770427 of 1904. This completes the entire folding of the packet, which is then eventually forced out of the race by the fresh access of another packet through the matrix or by the thrust of the bar c.

Where the foil or other material is resilient, I arrange the side folders as shown in No. 770427 of 1904 with a cup-shaped projection h see Fig. 15, which comes home upon the edges of the race and the base, so as to obtain a nip or raised edge on the foil along the edges of the ends of the packages, thus making a permanent fold.

A fixed plate g^1 is provided with lengthy plates passing through the moving roof a of so narrow a width that when pressing down the foil to the required size of package an irregularly shaped cigarette will pass under such lengthy plates without tending to be rolled up upon its neighbor. In the portion of these lengthy plates first presented to the cigarette packet as at g^2 Fig. 15, they are raised above the normal level of the cigarettes, but in the latter portion of these plates covering the second position of the packet in the tunnel they are brought down absolutely to the normal level.

The upper roof a of the tunnel when descending upon the top of the package smooths all irregularities in the foil and holds the package against the withdrawal of the receding pusher and fingers f^1 which is withdrawn to clear the matrix for the next arrival of a package.

To avoid the accumulation of dust of tobacco among the working parts, I mount the under platform d upon the ends of horizontal parallel bars i^1 i^1 so without fixed sliding ways as heretofore the said parallel bars serve to maintain the vertical ascent of the table d when pushed upwards by a roller i^2 and the cam d^1. Further, I arrange all the end folding mechanism and levers upon standards k in a deep box k^1 forming a shallow tray at the bottom, but otherwise open at the sides at k^2. The end folding mechanism cannot thus be jammed or interfered with by any accumulation of dust, which falls freely into the shallow tray of the box.

In order that the operator while handling the foil should be able to quickly and rapidly stop and start the mechanism at any time, I provide a foot pedal l moved by the operation of the foot, having a slotted cam l^1, which, by the vertical movement of the pedal, pulls the lever l^2, turning on its center l^3, in such a way, as to withdraw the clutch l^4 horizontally from its engagement with the driving pulley l^5.

In this machine the loading chamber under the packing plunger is open to the observation of the operator, by placing the guide m for the plunger q at the back of the plunger relatively to the operator.

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

1. In a cigarette wrapping machine in combination, a main shaft, a cam thereon, a lifting lever moving about a center operated by the said cam, a race, a movable roof to the said race forming part of the said lever, transverse under projections on said roof making a joint upon the packets, the said roof being lifted by the said cam to admit sliding movement of the packets thereunder.

2. In a cigarette wrapping machine, in combination, a main shaft having operative means thereon, a race, a movable roof to the said race operated from the said shaft, a lever carrying the said roof, and an under bar carrying fingers, affording a stop mutually geared with the said lever of the extended roof to keep the cigarettes in the said race when the foil is not fed.

3. In a cigarette wrapping machine, in combination, a main shaft having a cam thereon, a lever operated by said cam and attached to the sliding plate, a sliding plate receiving motion therefrom, a race, an under pusher having projecting fingers to push the packet from one position to the next, a projecting stop from the sliding plate engaging with lost motion with the said under pusher, and means for lowering the said pusher on the return stroke to clear the packet.

4. In a cigarette wrapping machine, in combination a race, a movable roof thereto, a fixed plate above the said roof having three projections downwards, which pass to either side of the said roof, their lower edges forming a guide in the race to the passing packets, the first parts of the said edges being above the normal level of the cigarettes, and the latter part of the said edges being brought down to the normal level of the packed cigarettes.

5. In a cigarette wrapping machine, in combination, a main shaft with a sliding plate, a race, bell cranks operated by said sliding plate, side pressers on each side of said race operated by said bell cranks, a fixed plate above the race, an under fixed plate below the race the faces of such presser plates being furnished with projections adapted to slightly enter between the fixed plate above the race and the under fixed plate below the race, thus entering on to the packet so as to form a complete nip to the ends of the covering material.

6. In a cigarette wrapping machine, in combination, a race, a fixed plate above the said race, and a spring shield fixed to the front of the said fixed plate above the said race, whose lower edge does not come down to the final level of the finished package to make the third fold, and thus to permit the passage of slightly distorted goods.

7. In a cigarette wrapping machine, in combination, an upper slotted table, a matrix therein, a main shaft with cams on it, a hinged folding plate pivoted to the side of the matrix, operated by a cam from the said shaft, of such a length so as to reach up to the top level of the said slotted table, an under pusher with raised plates to push the made packet, and a separate mechanism bringing down the said folding plate over all the cigarettes and holding same in position, until the plates on under pusher engage the packets.

8. In a cigarette wrapping machine, in combination, a main shaft having cams thereon, a sliding plate receiving motion therefrom, a race, a matrix a hinged folding plate by side of matrix, a main pusher fixed to the sliding plate, the said pusher by the action of the said plate pushes the cigarettes towards the exit in the race, a hinged folding plate pivotally fixed to the side of matrix, thin projecting fingers upon the said main pusher, sliding in recesses under the hinged folding plate, and a movable roof to the said race operated by the said shaft and cam, so as to

come down on the cigarette packets to retain the same while the pusher retires.

9. In a cigarette wrapping machine in combination a race, a main shaft with a cam thereon, an under bar lifted by the said cam to come up at the end of said race said cam having a recess therein to allow said bar to fall and to lift again, when the point of the bar is under the cigarette case, a sliding plate with a projection thereon to operate the said under bar, tuckers situated on either side of the said race, and flat fingers upon the said under bar adapted to be lowered by engagement with the said cam recess and to be afterwards lifted by the subsequent level of the cam to permanently fold the said cover against the under side of the said tuckers.

10. In combination with a cigarette wrapping machine, a main shaft, a cam thereon giving movement to an under reciprocating moving platform, a matrix, a moving platform forming the floor to the matrix, two parallel horizontal levers, forming a parallel motion to keep the said moving platform vertical without a fixed bearing.

11. In a cigarette wrapping machine, in combination, a tunnel a fixed floor to the machine, an adjoining floor fixed thereto under the said tunnel with apertures through it, an under box side tuckers and folders mounted upon standards in the under box, the said under box forming a shallow tray for the accumulation of dust.

12. In a cigarette wrapping machine, in combination, a main shaft, a cam thereon, means for wrapping a package with foil, means for making a nip upon the ends of the foil covering the package to prevent the foil opening out again after it leaves the machine and means controlled by said cam for operating the said nipping means from the main shaft of the machine.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED GODFREY.

Witnesses:
JOHN C. FELL,
CHARLES CARTER.