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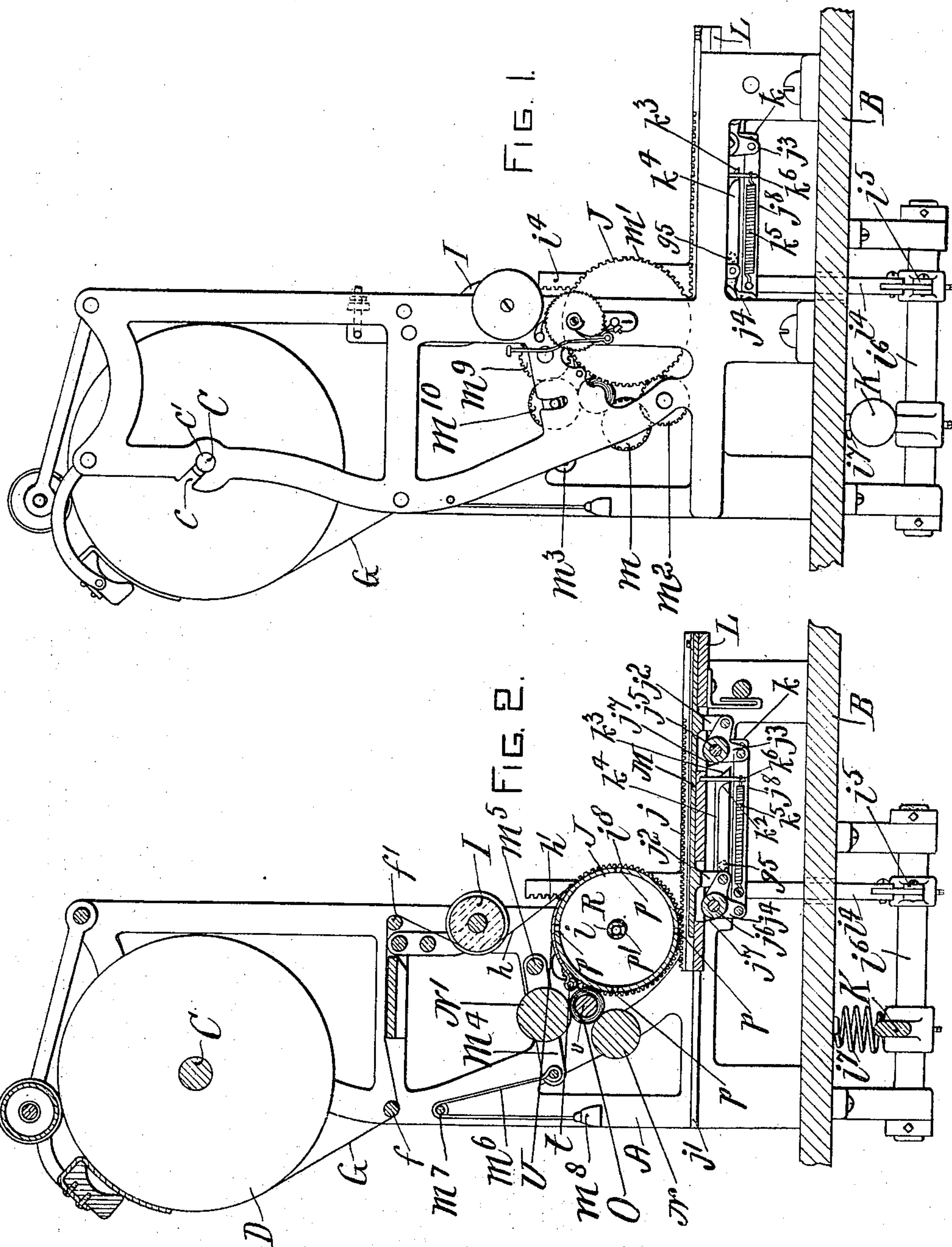
PATENTED APR. 11, 1905.

W. H. COE.

MACHINE FOR FORMING PACKAGE ROLLS OF METALLIC LEAF.

APPLICATION FILED AUG. 14, 1902.

3 SHEETS—SHEET 1.



WITNESSES

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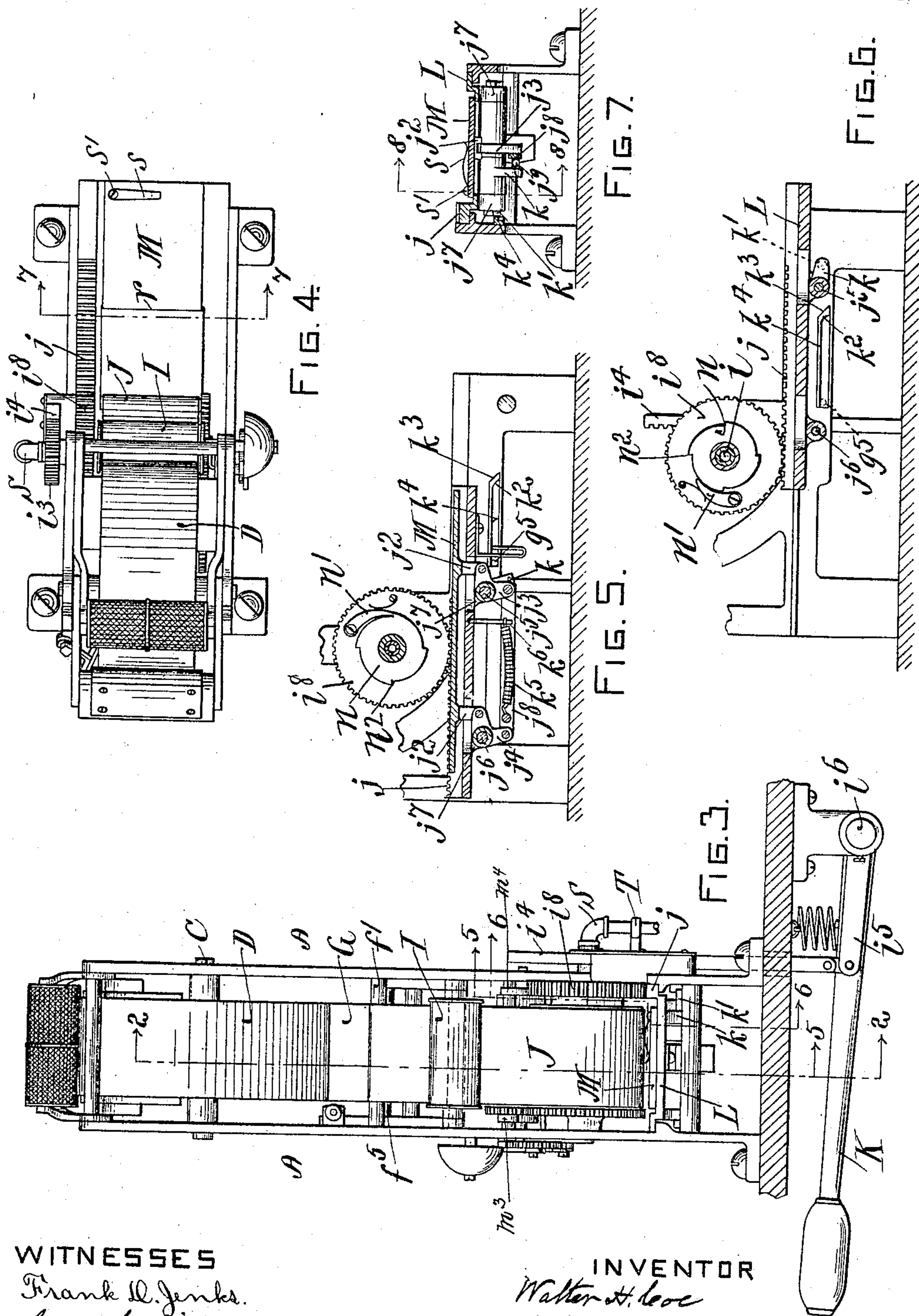
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3 SHEETS—SHEET 2.



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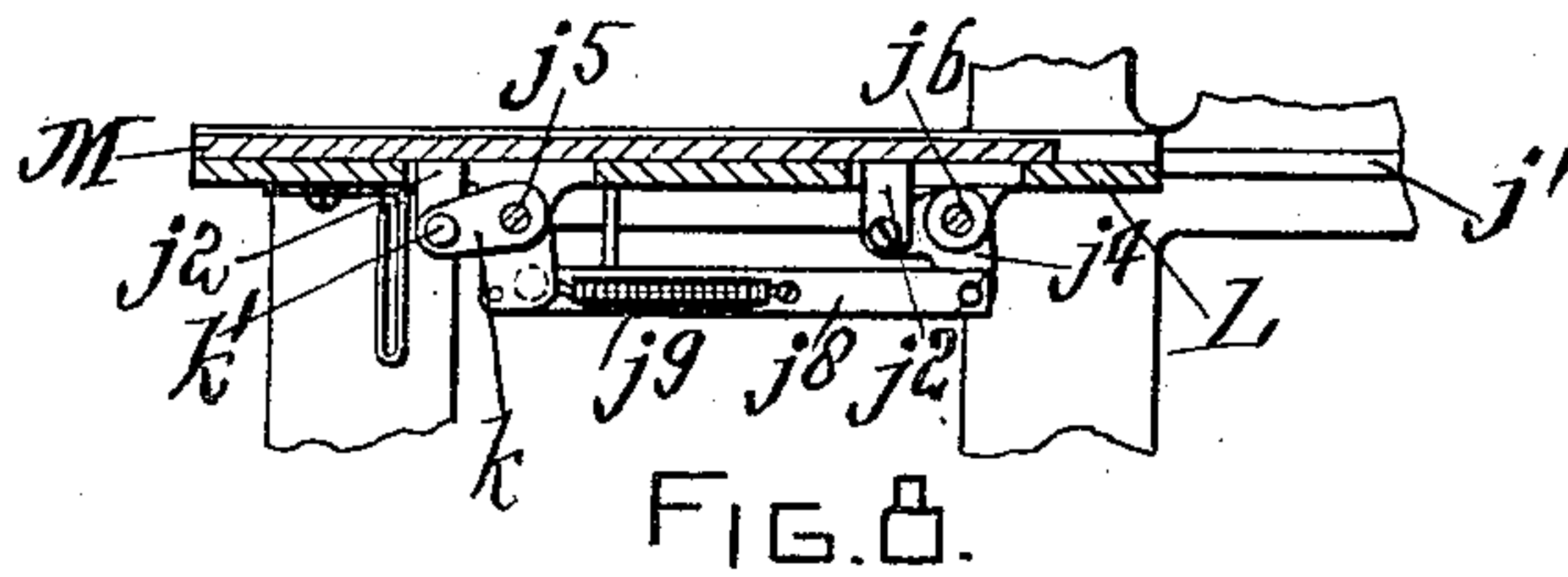


FIG. 8.

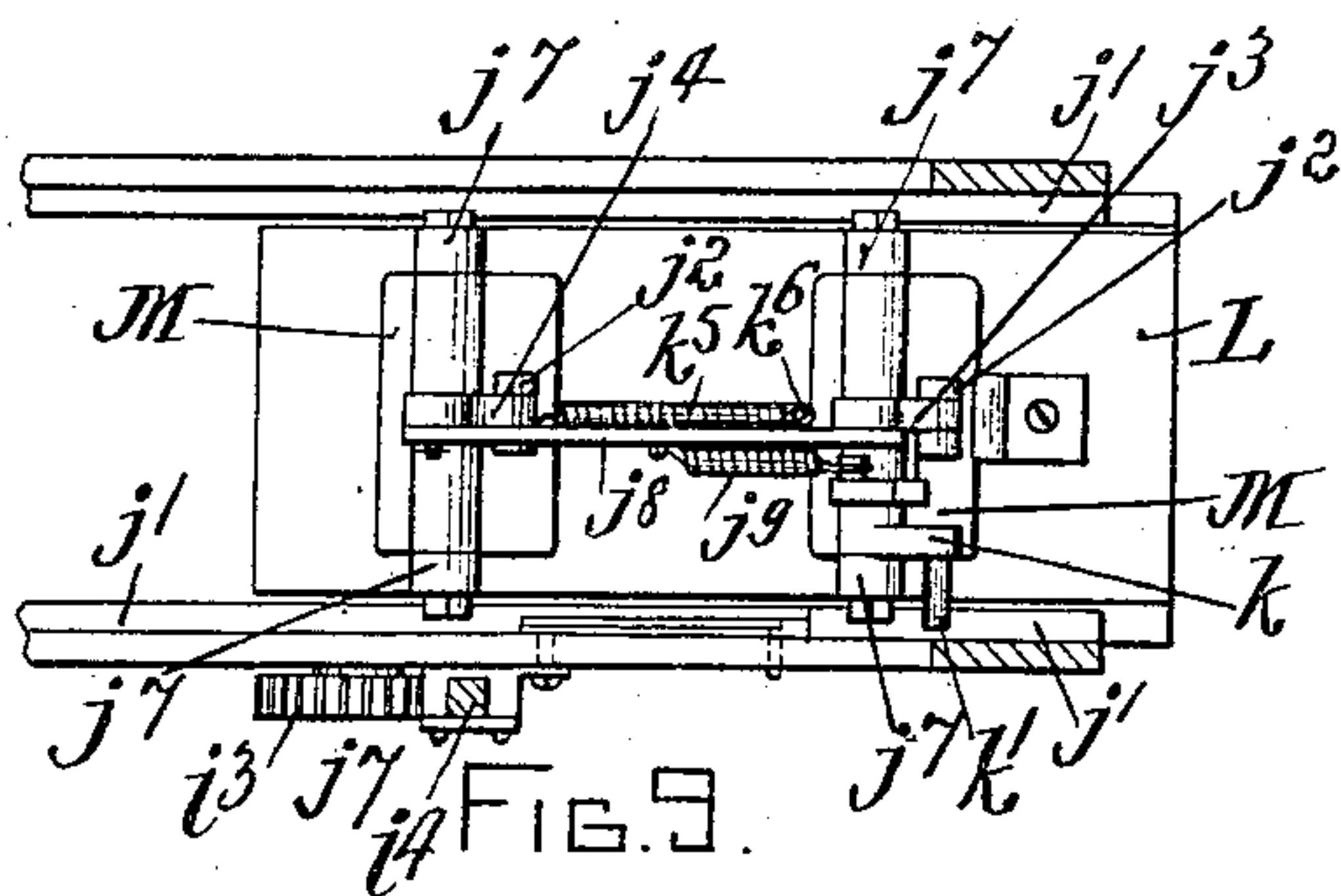
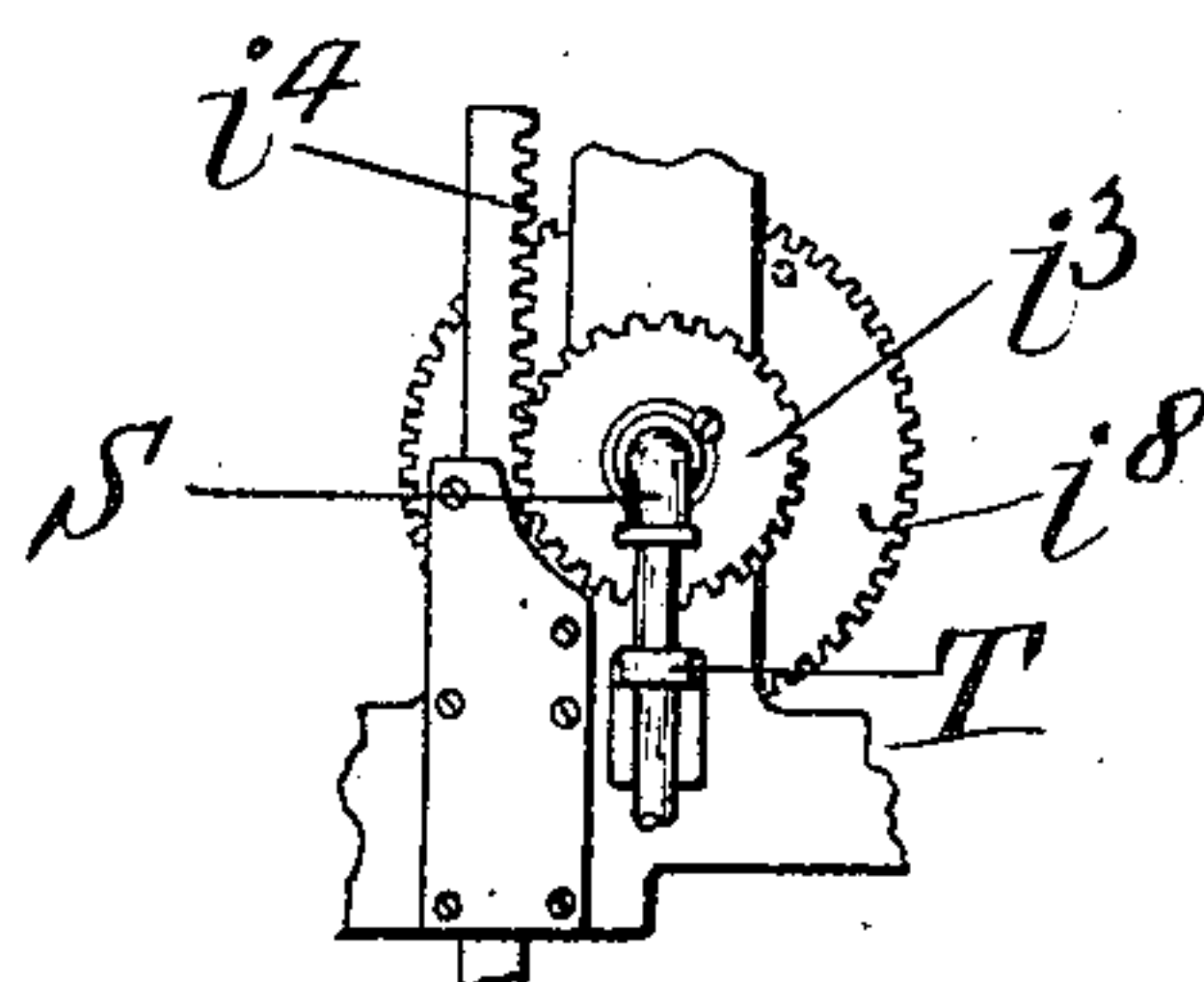


FIG. 9.



UNITED STATES PATENT OFFICE.

WALTER H. COE, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR FORMING PACKAGE-ROLLS OF METALLIC LEAF.

SPECIFICATION forming part of Letters Patent No. 786,953, dated April 11, 1905.

Application filed August 14, 1902. Serial No. 119,672.

To all whom it may concern:

Be it known that I, WALTER H. COE, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Forming Package-Rolls of Metallic Leaf, of which the following is a specification.

In the manufacture of package-rolls of metallic leaf in which the metallic leaf is applied to the paper strip as it passes under a pressure-roll it is found that the corners of the sheet of metallic leaf are liable to separate from the paper strip and drop therefrom in its passage to the winding-rolls, requiring the operator to stop the machine and replace the sheet by hand, thus losing a considerable amount of time; and it is the object of my invention to provide means for preventing such delay and loss; and my invention consists in the employment of a perforated chamber in connection with air-exhausting means whereby the sheet of metallic leaf will be held in place by the suction of air through the pores of the paper strip with which the metallic leaf is to be wound.

In the accompanying drawings, Figure 1 represents a side elevation of a machine embodying my improvement. Fig. 2 represents a central vertical section taken in the line 2 2 of Fig. 3. Fig. 3 represents a front end view. Fig. 4 represents a top view. Fig. 5 represents a detail section taken in the line 5 5 of Fig. 3, showing the supporting-table for the book of metallic leaf when near its extreme rearward position. Fig. 6 represents a detail section taken in the line 6 6 of Fig. 3 with the table removed and the table-holding bed in its extreme forward position. Fig. 7 represents a transverse section taken in the line 7 7 of Fig. 4. Fig. 8 represents a vertical section taken in the line 8 8 of Fig. 7. Fig. 9 represents an under view of the sliding bed which carries the lifting-table. Fig. 10 represents a detail rear view showing the rack and gear for actuating the pressing and suction roll. Fig. 11 represents an axial section of the pressing and suction roll. Fig. 12 represents a transverse section of the same.

In the drawings, A represents the frame of the machine, provided at its upper end with

the journal-bearings *c*, adapted to receive the journals *c'* of the mandrel C, upon which is placed the supply-roll of paper D, from which the paper strip is to be drawn in the operation of the machine. The paper strip G, which is powdered upon one side to prevent adhesion of the metallic leaf thereto, passes from the supply-roll D under the tie-rod *f* of the frame, thence over the tie-rod *f'*, and downward to contact with the inner side of the cylindrical bar of wax I, which is arranged at the side of the paper strip opposite to the powdered surface. The oppositely-powdered and waxed paper strip passes thence to the periphery of the pressing and suction roll J, the powdered surface *h* of the paper strip being on the inner side in contact with the surface of the roll, the waxed surface *h'* of the same being on the outer side.

The roll J is secured upon a hollow shaft *i* by means of the set-screw *i'*, which is held in a hub at the forward end of the roll. The opposite end of the shaft *i* passes through the loose sleeve *i''*, upon the outer end of which is secured the gear *i'''*, which engages with the teeth of the rack *i''''*, by means of which the gear *i'''* may be actuated in opposite directions, the said rack *i''''* being jointed to the arm *i'''''*, which is secured to the loosely-journalled bar *i''''''*, provided with the outwardly-extending hand-lever K, by means of which the machine is operated, the said hand-lever being held in its upward position by means of the spiral spring *i'''''''*, secured at its upper end to the under side of the bench B. To the inner end of the sleeve *i''*, at the inner side of the frame A, is secured the gear *i''''''*, which engages with the rack-teeth *j* of the sliding bed L, the said sliding bed being supported between the parallel sides of the frame A upon the parallel ways *j'* *j''*. The downward and upward movement of the hand-lever K by the operator of the machine will cause a rocking movement of the sleeve *i''* and the gear *i''''''* and a corresponding reciprocating movement of the sliding bed L.

The sliding bed L carries the table M, upon which the book of metallic leaf is to be placed, in proper position for the attachment of the sheets, singly and properly lapping each other, upon the waxed side of the paper-strip G, the

said table M being provided with the downwardly-extending lugs $j^2 j^2$, to which are pivoted the bell-crank levers $j^3 j^4$, which are loosely held upon the stationary bearing-rods $j^5 j^6$, held in the downwardly-extending lugs $j^7 j^7$ of the sliding bed L. The said bell-crank levers $j^3 j^4$ are connected with each other, so as to move in unison, by means of the connecting-link j^8 , to the rearward side of which is secured the spiral spring j^9 , (shown in Figs. 8 and 9,) the opposite end of the said spiral spring being secured to the loose bell-crank lever k , which, together with the loose bell-crank lever j^3 , is held upon the stationary bearing-rod j^5 . At the rearward side of the forwardly-projecting horizontal arm of the bell-crank lever k is secured the stud k' , which engages with the upper surface of the latch-cam k^4 , the said latch-cam being pivoted to the inner side of the frame at the point g^6 and held by a suitable stop in its normal position, as shown in Figs. 5 and 6, and adapted to be raised at its outer end upon the engagement of the stud k' with the incline k^3 at the backward movement of the sliding bed.

The roll J is operated intermittently by means of the ratchet-wheel n , which is secured to the rearward end of the said roll, and the spring-actuated ratchet-catch n' , the notches n^2 of the ratchet-wheel being so arranged that upon the downward movement of the hand-lever K by the operator of the machine the roll J will be turned so that the periphery of the said roll will be moved forward for a space equal to the length of one of the sheets of metallic leaf less the distance required for the lapping contact of the edges of the said sheets upon the paper strip G. When the operator of the machine depresses the hand-lever K, the sliding bed L and the table M will be carried forward under the roll J until the stud k' engages with the incline k^3 at the outer end of the latch-cam k^4 , thus causing the said stud to rise to the top of the said latch-cam, thereby causing the angular movement of the bell-crank lever k , which, through the spiral spring j^9 , connected with the link j^8 , serves to lift the book of metallic leaf held upon the table M to contact with the paper strip G at the under side of the roll J. The spiral spring k^5 is attached to the link j^8 and serves to check the downward movement of the table.

At the back of the roll J and at a certain distance therefrom is placed the stationary-held roll N, provided at its forward end with a gear m , which is connected with the gear m' upon the forward end of the roll J by means of the intermediate gear m^2 . The movable roll N' is journaled in the opposite arms $m^3 m^4$, which are rigidly secured to the rod m^5 , the said rod being loosely journaled in the sides of the frame A, so that the roll N' may have an up-and-down movement in the arc of a circle whose center is the axis of the rod m^5 . To the outer end of the arm m^4 is attached the

cord m^6 , which passes over the pulley m^7 , and to the pendent end of the cord m^6 is attached the weight m^8 , by means of which a portion of the weight of the movable roll N' may be balanced, so as to secure the required degree of pressure upon the package-roll O, which is held for winding revolution between the movable roll N', the stationarily-held roll N, and the pressing and suction roll J. The movable roll N' is provided at its forward end with the gear m^{10} , which is connected with the gear m' upon the forward end of the roll J by means of the intermediate gear m^9 , held upon the rod m^5 , which forms the pivoting-axis of the movable roll.

The pressure and suction roll J is provided with the series of perforations $p p$, through which the air may be drawn inward from the surface of the roll, and the hollow shaft i is provided with a perforation p' , through which the air from the chamber R of the roll J may be drawn by means of the stationary air-exhaust pipe S, which is supported from the frame A by means of the bracket T, the end of the said exhaust-pipe passing into the cavity w of the shaft i to form a tight joint. The exhaust-pipe S may connect with an exhaust-fan blower or any other suitable means for creating the desired rarefaction of the air within the chamber R. At the upper side of the roll J is placed the covering-flap U, which is held upon the rod t and serves to prevent the air from passing inward through the series of perforations p at the upper side of the roll, which would not be covered by the paper strip G.

In the operation of the machine the book for holding the sheets of metallic leaf is to be clamped upon the table M, so that the back of the said book will rest upon the table at about the line v in Fig. 4, the backwardly-thrown opened leaves of the said book being suitably clamped to the table by means of the spring-button s , which is pivoted upon the screw s' , so as to be moved to the required position. Then as the hand-lever K is depressed by the operator the sliding bed L will be carried forward under the roll J, so that the stud k' will engage with the incline k^3 at the outer end of the latch k^4 , thus causing the upward movement of the table, with the attached book of metallic leaf, until the top sheet of metallic leaf strikes against the previously-waxed under surface of the paper strip G, the said book of metallic leaf being then held against the said paper strip on the roll J with a yielding pressure, caused by the resilience of the spring j^9 , which serves to maintain the table M in its elevated position under the roll J, and the said top sheet of metallic leaf will thereafter be carried forward in contact with the paper strip and pressed thereon until the stud k' arrives at the pivoted end of the latch-cam k^4 and drops therefrom, thus releasing the table M and allowing it to drop to its

former position upon the sliding bed L, the rapidity of the downward movement of the said table being checked by means of the spiral spring k^5 , which is attached at one end to the connecting-link j^8 and at the other end to the downwardly-extending pin k^6 , which is secured to the under side of the sliding bed. As soon as the table M has dropped to the supporting-surface of the sliding bed L the upward movement of the hand-lever K will cause the backward movement of the sliding bed L and the table M, the stud k' passing back under the latch-cam k^4 , which latch-cam will be first lifted by the stud and then allowed to fall to its normal position after the passage of the said stud beyond the outer end of the said latch-cam, so that upon the return movement of the said stud it will again be raised by the incline k^3 at the outer end of the latch-cam.

While the table is in its extreme backward position, as shown in Figs. 2 and 4, the operator turns another leaf of the book of sheets of metallic leaf, thus exposing a new sheet which will be properly applied to the paper strip G and lapped with the edge of the previously-applied sheet upon the succeeding depression of the hand-lever K, by means of which the exposed sheet of metallic leaf will be first brought to the required point and then raised to contact with the paper strip as before, with its forward edge lapped to the proper extent upon the rearward edge of the previously-applied sheet, and this operation will be continued until all the leaves of the said book have been turned and the exposed sheets of metallic leaf attached to the under side of the paper strip G upon the roll J and the lapped and attached sheets of metallic leaf have been wound into a package-roll O upon the core c .

When the machine for packaging metallic leaf in a roll is being operated without the employment of a suction-chamber, the sheet of metallic leaf is liable to separate from the paper strip G as it rises from the table M to the package-roll O, which separation requires the stopping of the machine to repair this defect in the adhesion of the sheet of metallic leaf to the paper strip; but by the employment of a suction-chamber R the air will be drawn inward through the open pores of the paper strip G, so that the metallic leaf at the outer side of the paper strip will be held firmly thereto by suction, and by this means the difficulty heretofore experienced will be obviated.

A suction-chamber adapted for transferring sheets of metallic leaf safely from one place to another in a machine by means of suction

applied to the back of a supporting paper strip may be made in various forms. Therefore I do not limit my invention to the particular construction described for the safe transference of sheets of metallic leaf from one place to another in a machine, and by my invention sheets of metallic leaf may be wound up into a package-roll with a supporting paper strip, without the employment of wax or other adhesive material, when desired, the suction produced being sufficient to retain the metallic leaf in connection with the paper strip.

I claim as my invention—

1. In a machine for putting up sheets of metallic leaf in connection with a paper strip, the combination of means for winding the paper strip and sheets of metallic leaf together upon a core to form a package-roll, and means for feeding the sheets of metallic leaf onto the paper strip which is being wound, with suction means operating through the pores of the paper strip to hold the metallic leaf thereto in its passage from the feeding means to the winding means for the metallic leaf and paper strip.

2. In a machine for putting up sheets of metallic leaf in connection with a paper strip, the combination of the rolls for winding the paper strip and metallic leaf into a package-roll, and means for feeding the sheet of metallic leaf onto the paper strip, with suction means operating through the pores of the paper strip to hold the metallic leaf thereto in its passage to the winding-rolls.

3. In a machine for putting up sheets of metallic leaf in connection with a paper strip, the combination of the perforated cylinder and means for exhausting the air from the cylinder, with means for winding up the paper strip and metallic leaf into a package roll, and means for depositing the metallic leaf upon the paper strip at the periphery of the perforated cylinder.

4. In a machine for putting up sheets of metallic leaf in connection with a paper strip, the combination of the perforated cylinder, means for exhausting the air from the cylinder, and the flap for covering the exposed perforations, with means for winding up the paper strip and metallic leaf into a package-roll, and means for depositing the metallic leaf upon the paper strip at the periphery of the perforated cylinder.

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Witnesses:

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