G. TOWNSEND.

PAPER BAG MAKING MACHINE.

APPLICATION FILED APR. 12, 1909.

989,667.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

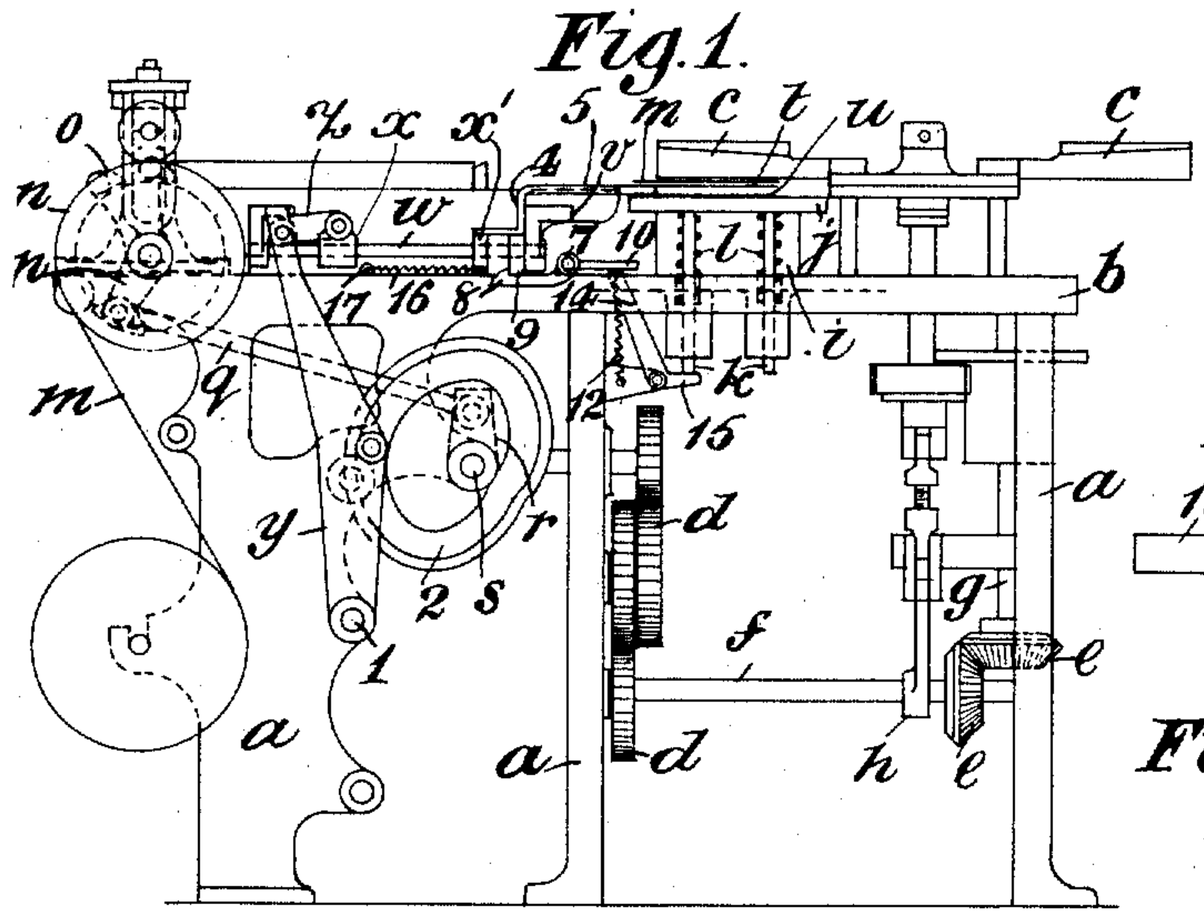


Fig. 11.

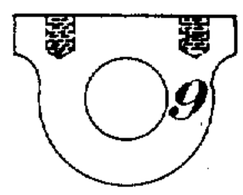


Fig. 12.

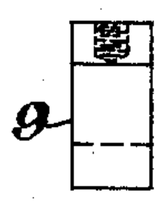
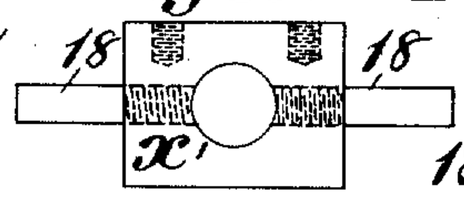


Fig. 13.



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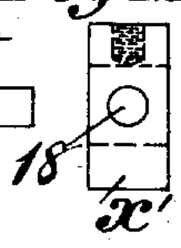


Fig. 15.

Fig. 16.

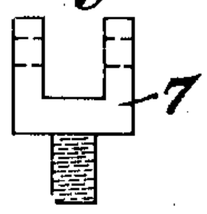


Fig. 2.

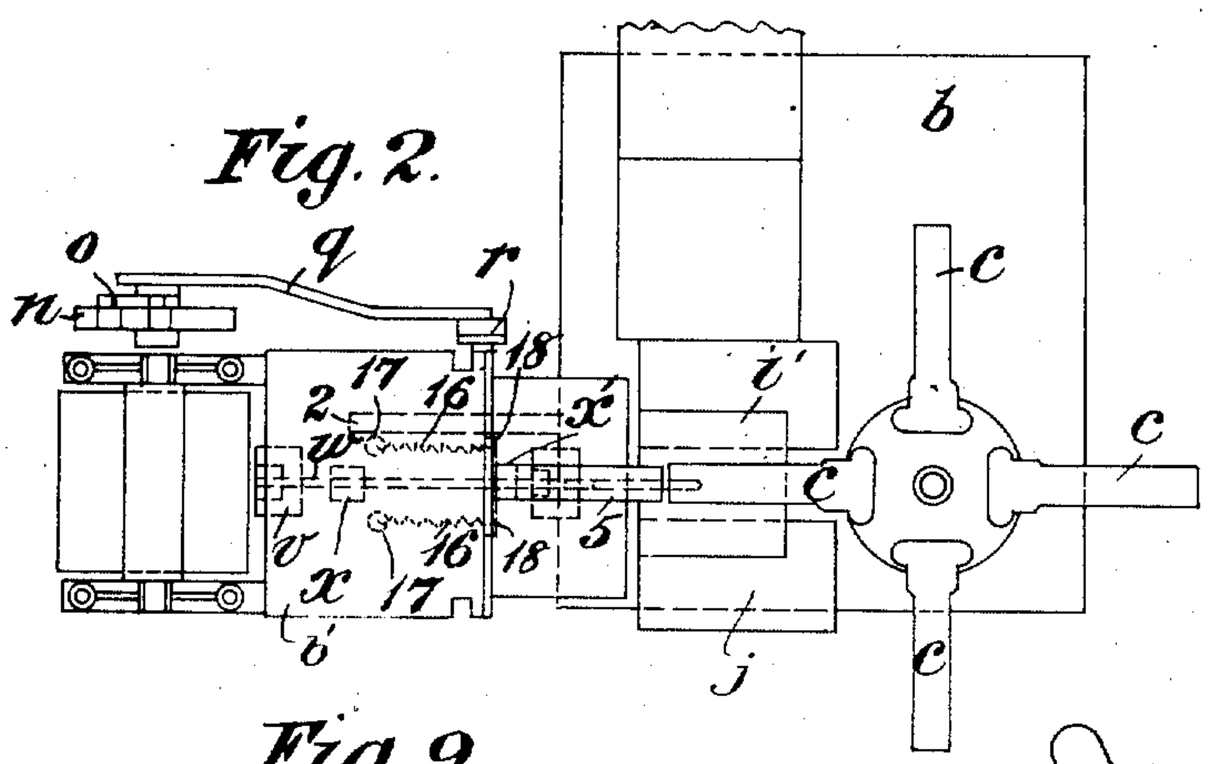
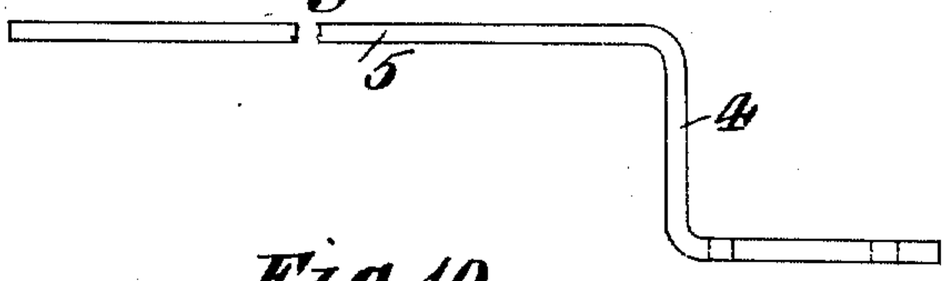


Fig. 17.

Fig. 9.



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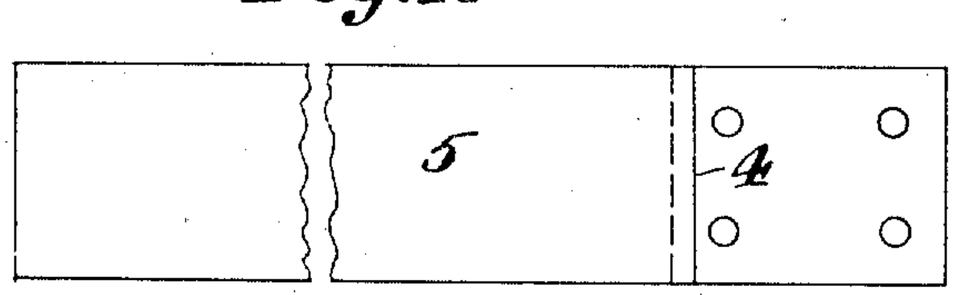


Fig. 6.

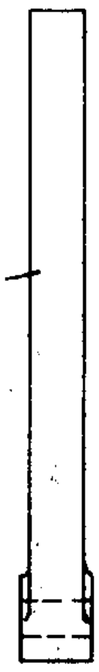
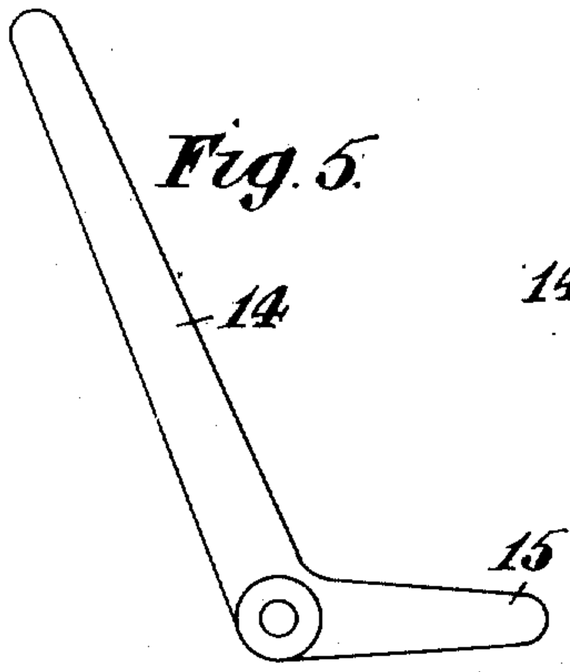


Fig. 5.



Witnesses

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PAPER BAG MAKING MACHINE.

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2 SHEETS—SHEET 2.

Fig. 3.

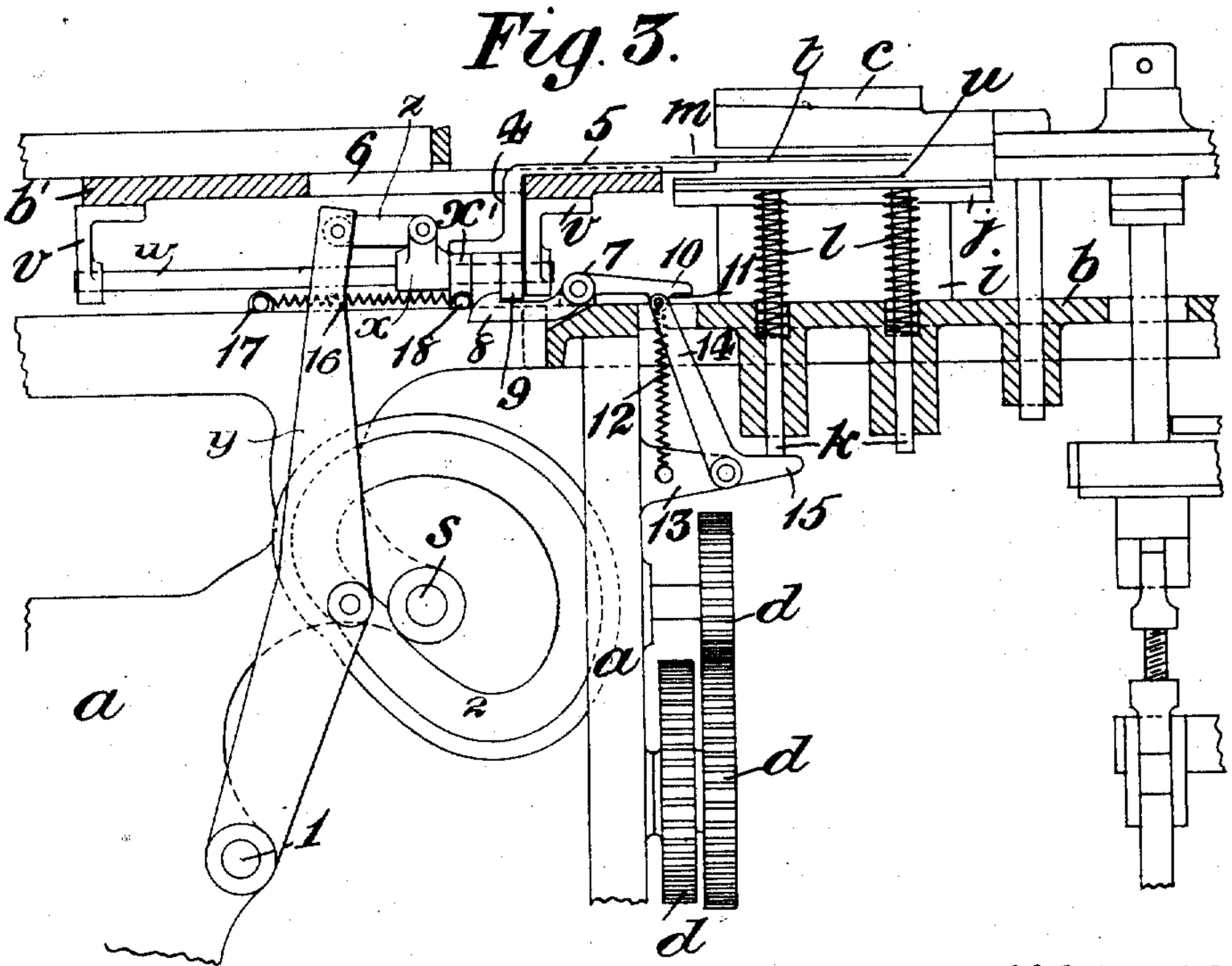

Fig. 4.

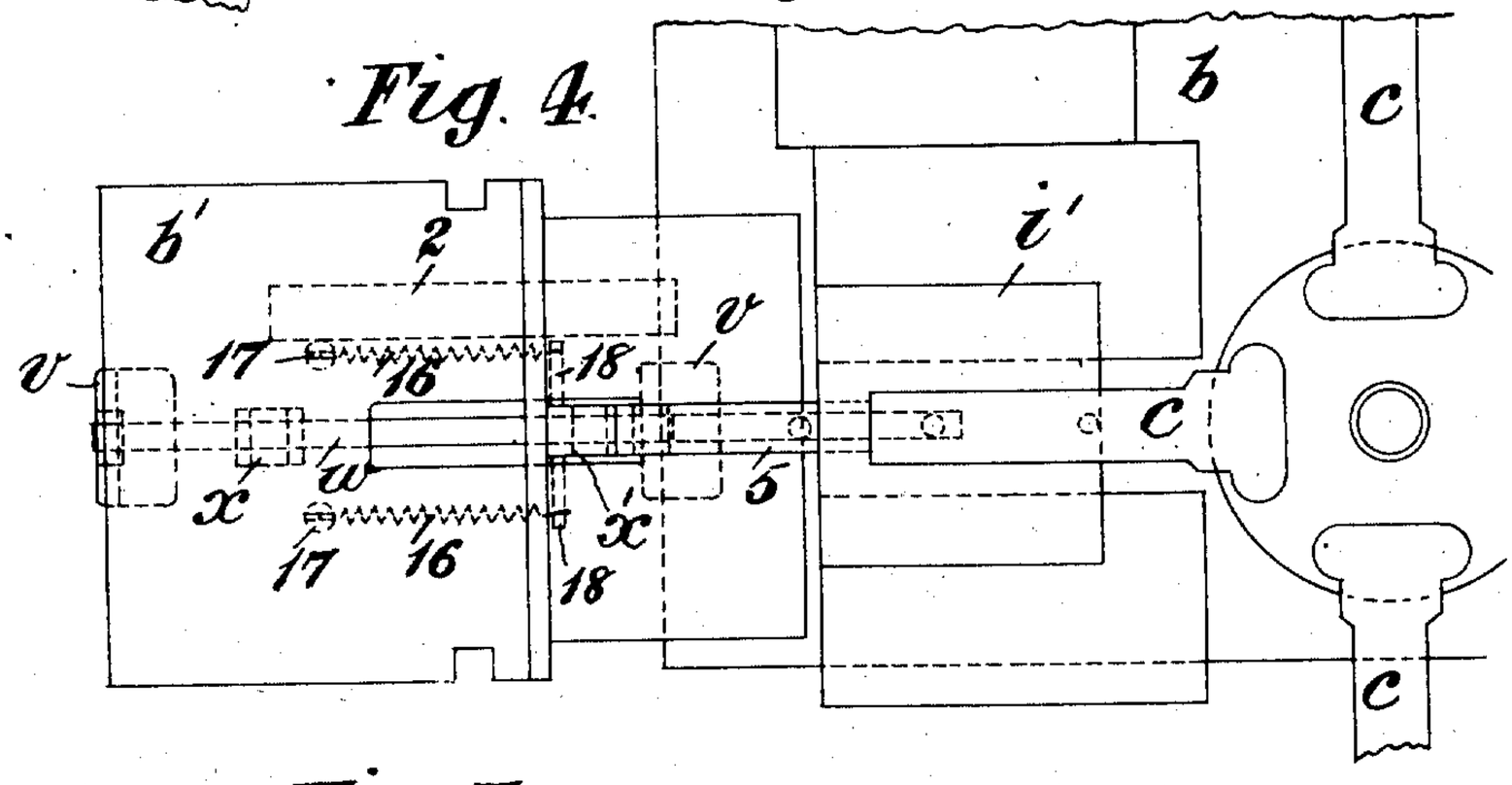

Fig. 7.

Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE TOWNSEND, OF MOSCOW, RUSSIA, ASSIGNOR TO JOB DAY AND SONS LIMITED, OF LEEDS, ENGLAND, A CORPORATION OF ENGLAND.

PAPER-BAG-MAKING MACHINE.

989,667. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed April 12, 1909. Serial No. 489,404.

To all whom it may concern:

Be it known that I, GEORGE TOWNSEND, residing at Mala Kasyonnie Peroulock, Sadovy House, Cilivanofskie No. 13, Moscow, in the Empire of Russia, engineer, have invented new and useful Improvements in Paper-Bag-Making Machines, of which the following is a specification.

This invention has reference to improvements in machines for making paper bags of the open or closed, self opening or round bag or other type of bag with the square or rectangular or other end folds.

Hitherto in bags of the above named type which have been made of an outer printed or plain paper and one or more linings of papers of lead, a difficulty has arisen in causing the outer folded end paper to be secured in position and at the same time to produce a perfectly tight bag. This difficulty has chiefly arisen from the outer paper and linings being all folded together.

The object of this invention is to overcome the difficulty mentioned by forming a bag with one or more linings and by means of suitable mechanism fold the end or ends of said lining or linings only on one side of the bag over the bag "former" end leaving the end of the bag proper standing. Afterward each of the then remaining sides and linings are together folded over to close the bag, and finally, the upstanding end of the bag proper is turned over the other folds and the operation is complete unless the folds are to be fastened which may be done by paste on the last fold, applying a label, or in any other manner desired. A tight closure is then formed which will prevent the contents of the bag from escaping. When the bag is to be opened, the end of the bag only, last folded, is first raised, then the folded ends of the remaining three sides of the bag and its linings are raised leaving only the lining or linings first folded still covering the contents of the bag which may remain thus to prevent loss of said contents until the bag is to be emptied when said lining fold may be raised.

The invention may be conveniently carried into practice by mechanism arranged as hereinafter described, but which will require to be modified according to the type or class of paper bag forming machine to which it is applied.

The invention is shown in the drawings hereunto annexed applied to a paper bag machine with rising and falling intermittently rotating "formers" of the type shown and described in United States Patent to C. H. and A. Day, No. 755,754, granted March 29, 1904.

In the accompanying drawings:—Figure 1 is a part elevation of such a machine with this invention shown in position; Fig. 2 is a part plan of the same; Fig. 3 is an enlarged part elevation of machine shown at Fig. 1; Fig. 4 an enlarged plan of same; Fig. 5 a side elevation of one of the levers; Fig. 6 an end elevation of the same; Fig. 7 an elevation of hooked lever; Fig. 8 a plan of the same; Fig. 9 an elevation of a thin metal plate for separating the linings from the outer paper of the bag; Fig. 10 a plan of the same; Fig. 11 is a front elevation of boss or catch; Fig. 12 an end elevation of the same; Fig. 13 a side elevation of a front block with projecting pins to which the spring is attached; Fig. 14 an end elevation of the same; Fig. 15 an elevation of a bifurcated fixing for the hooked lever; Fig. 16 an end elevation of the same; Fig. 17 an elevation of spring. Figs. 5 to 17 are drawn to a larger scale than Figs. 1 to 4.

Like parts in all the views are marked with similar letters of reference.

a is the framework of the machine, *b* the table, *c* the intermittently rising and falling and rotating "formers," the outer portions of which are diagonally divided.

d and *e* are respectively spur and beveled gearing, by which an intermittent rotary motion is imparted to the shafts *f* and *g*.

h is the cam for imparting the requisite rising and falling motion.

i is the folding box, the bottom *j* of which is carried upon the pins *k*, and is retained in an upward position by means of springs *l* coiled around the same.

m the lining paper, which is mounted upon the framework in roll form as shown at Fig. 1, and is arranged to be intermittently let off the same by means of the ratchet wheel *n* operated by pawl *o*, lever *p*, and connecting rod *q* from the crank *r* mounted upon the shaft *s*.

t is a lead or other lining blank, and *u* the outside bag blank.

All the above described parts may be of the usual and ordinary construction as is employed on machines of this type.

To the underside of the table or board b^1 of the machine upon which the paper or other lining blank nearest to the outer paper blank is made to pass, are fixed two brackets v in which are mounted horizontally one or more rods w. When two rods w are employed they should be arranged at a suitable distance apart and parallel with each other. On one or both of the rods w may be mounted two bosses x and x^1 so as to slide freely thereon when operated by lever y connected to one of the bosses by a link z. The lever y is pivoted to the framework a at 1, and is operated by a cam 2 upon the shaft s. On the front boss x^1 is fixed, by any suitable means, the rear end 4 of a separating plate 5. The said rear end 4 may be in the form of a bracket, or it may be a prolongation of the metal plate or blade 5 which is bent and curved to a lower level as shown at Fig. 3. The sliding metal plate or blade 5 is made of such a length, width and thickness that it will readily pass between the lead or other lining blank t nearest to the outer bag blank u, and when it has been moved to its extreme outward position it will have passed between the said two blanks and its end will just be clear of the folder. A slot 6 is formed in the table b^1 to permit of the plate or blade 5, and its bent end 4, working freely therein. To the table b is fixed a bifurcated bracket 7 in which is mounted and pivoted a hooked lever 8 adapted to engage with either the front boss x^1 or with a separating boss or block 9 mounted upon the rod w, and to which the rear end of the thin metal plate or blade 5 is fixed. The heel 10 of the hooked lever 8 is provided with a projection 11, to which one end of a spiral spring 12 is attached. The opposite end of the spring is attached to a bracket 13 which is fixed to, or forms part of, the framework a. To the bracket 13 is pivoted a bell-crank lever 14, the arm 15 of which is made shorter than its other arm. The arm 14 is arranged to act upon the under surface of the heel 10 of the hooked lever 8 while the arm 15 is in contact with the under side of one of the vertical rods or pins k, the spring 12 being employed to keep the heel 10 in contact with the upper end of the arm 14.

16, 16 are springs fixed at one end to suitable projections 17 formed on, or attached to, the frame a, while the opposite ends of said springs are connected to projecting pins 18 fixed in the sliding block x^1.

The action of the apparatus is as follows: The outer bag blank is fed onto the false bottom j of the folding box i and into position under the "former" c about the same time as the blank of lead or paper t, which forms one of the linings nearest to the inner surface of the outer bag blank u, is being fed onto the same. The movable plate or blade 5 is simultaneously moved into the position shown at Fig. 3, by cam 2, lever y, link z, and bosses x and x^1, and when it reaches its extreme position the hooked end of lever 8 will have become engaged with the boss or block 9 and the blade will remain in its outward position until the "former" c has descended and pressed down the false bottom j and rods k. As the "former" c descends into the folding box i the lining blanks t, and m will, by the downward movement of the "former" c and by the temporarily fixed position of the end of plate or blade 5, be turned upward and against the end of the "former" leaving the outer blank u in its original horizontal position ready to be folded in the ordinary way on this class of machines. As the false bottom j descends to its lowest position the rod k will have moved the arm 15 and the bell-crank lever downward causing the arm 14 to raise the heel 10 of the hooked lever 8 until the hook thereon is clear of the boss x^1 or block 9, when the said boss and block will be returned by springs 18 to its original position, thereby drawing the plate or blade 5, away from the folding box.

It will readily be understood that if desired the bosses x and x^1 and rods w may form part of the mechanism which is employed for conveying the lining blank t to the folding box i. When this is the case the cam 2, lever y and link z would be the same as employed for the movement of the said parts, in which case the metal plate or blade 5, and boss or block 9, and the levers 8 and 14 with their respective springs will require to be the only additional parts to be added to this class of machines. Paper bags which in the process of formation have a portion of the lining of each bag folded by separating a portion of the lining blank from the bag blank and turning said portion of the lining blank only against the ends of the "former" and afterward folding the remaining ends together with their linings over the previously inturned lining and finally completing the closure by folding the end of the bag blank over the other folds, will keep closed and tight with little difficulty. Should it be required to open the end of a bag thus formed it will be found that the whole of the four folded sides of the outer bag and the linings of three sides can be readily unfolded without disturbing the separately folded side of the lining. This improved method of folding the bag makes it more secure and less liable for the contents of the bag to escape therefrom and to be practically air tight.

It will readily be understood that although I have described this invention as being applied to the above named machine it can be readily modified to other makes and construction of machine, the essential feature being to fold a portion of one or more of

the lining or linings inwardly separate from the outer blank, and after the remaining sides of the bag and its linings have together been folded inward and the fold completed in the usual way, the upstanding portion of the bag is then folded to complete the bag.

What I claim is:—

1. A machine for making lined paper bags comprising means around which bags and their lining blanks are simultaneously folded in tubular form, and means insertible between a bag blank and a lining blank to fold a portion only of one end of said lining perpendicular to the bag blank.

2. A machine for making lined paper bags comprising means around which bags and their lining blanks are simultaneously folded in tubular form, and means insertible between a bag blank and a lining blank before the blanks are folded into a tube to fold a portion only of one end of said lining blanks perpendicular to the bag blank.

3. In a paper bag forming machine, the combination with the table of the machine having a folding box mounted thereon and provided with a false bottom mounted upon springs, a number of intermittently rising and falling "formers," each "former" divided diagonally into two parts, of a metal separator mounted upon a rod by bosses or projections, means for intermittently reciprocating the separator, a hooked lever for retaining the metal separator in an operative position and means for operating said lever.

4. In a paper bag forming machine, the combination with the table of the machine for supporting the bag and lining blanks and having a folding box mounted thereon provided with a false bottom having guiding pins and lifting springs, a number of rising and falling and intermittently rotating "formers" each "former" divided diagonally into two portions, and means for rotating and also causing the "formers" to rise and fall, of a rod having mounted thereon a sliding boss, a metal separator bent and attached by its rear position to said sliding boss, means for causing the metal separator to be intermittently moved in and out between the bag blank and its lining, a hooked lever pivoted to the framework of the machine for holding the metal separator in its operative position, a bell-crank lever adapted to act upon the heel of the hooked lever, said bell-crank lever being operated by one of said guide pins when the false bottom is depressed, and springs for respectively drawing the separator away from the "former."

5. In a paper bag forming machine, the combination of a "former," a thin intermittently reciprocating plate or blade adapted to be passed between the paper blank of the bag and its lining blanks, and means for reciprocating said blade and for holding it close to the end of said "former" during its descent for turning a portion of the linings against the end of the "former" before the other folds of the bag are made.

6. In a paper bag forming machine, the combination of a "former" therefor, a metal plate or blade employed for separating and turning up a portion of the lining blanks from the bag blank, combined with sliding blocks or brackets, and the means for intermittently reciprocating the same, whereby the said plate or blade may be made to travel outward simultaneously to the folding position with one of the linings of the bag, a hooked lever adapted to hold said blade in its outward position, and means for disengaging the hooked lever to release said blade, when the "former" descends to fold the blanks.

GEORGE TOWNSEND.

Witnesses:

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GUSTAV EUGEN HARTWIG.