

A. STEWART.
MACHINE FOR CUTTING AND FOLDING SANITARY SHIELD PACKAGES.
APPLICATION FILED OCT. 16, 1908.

934,368.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.

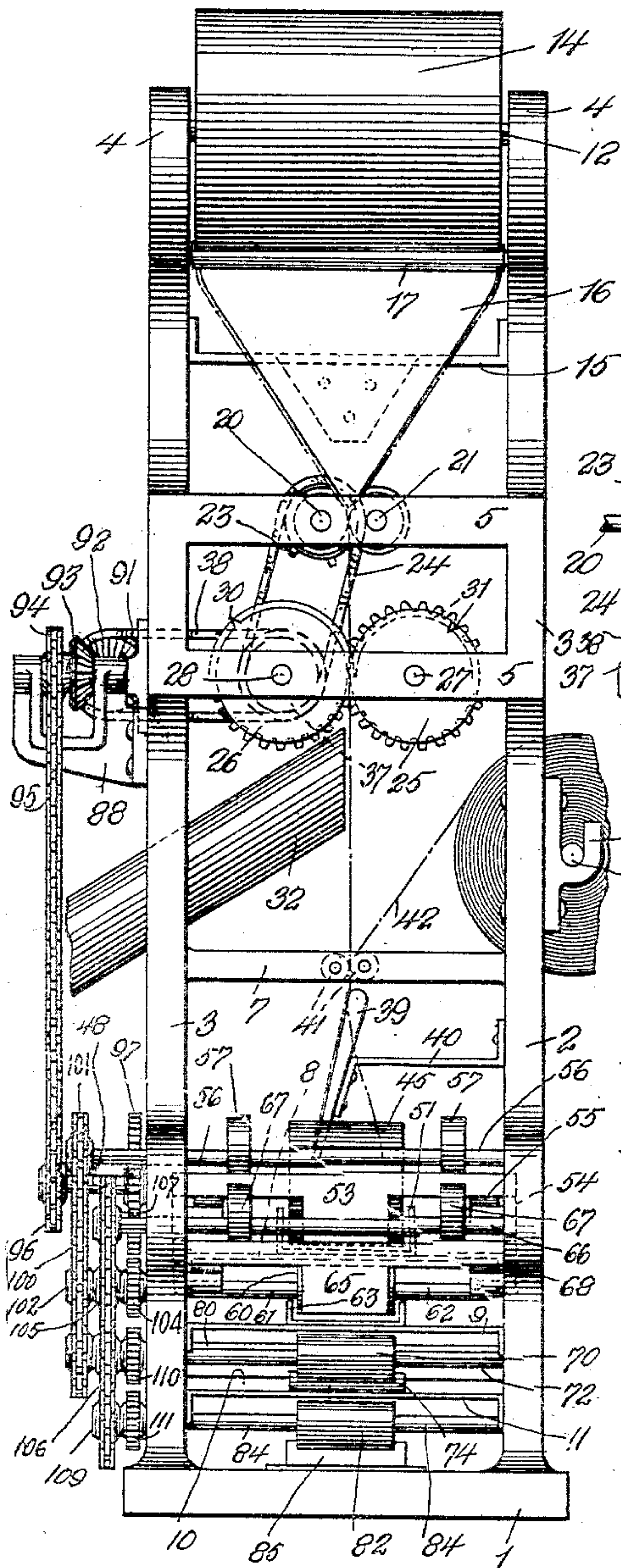


Fig. 1.

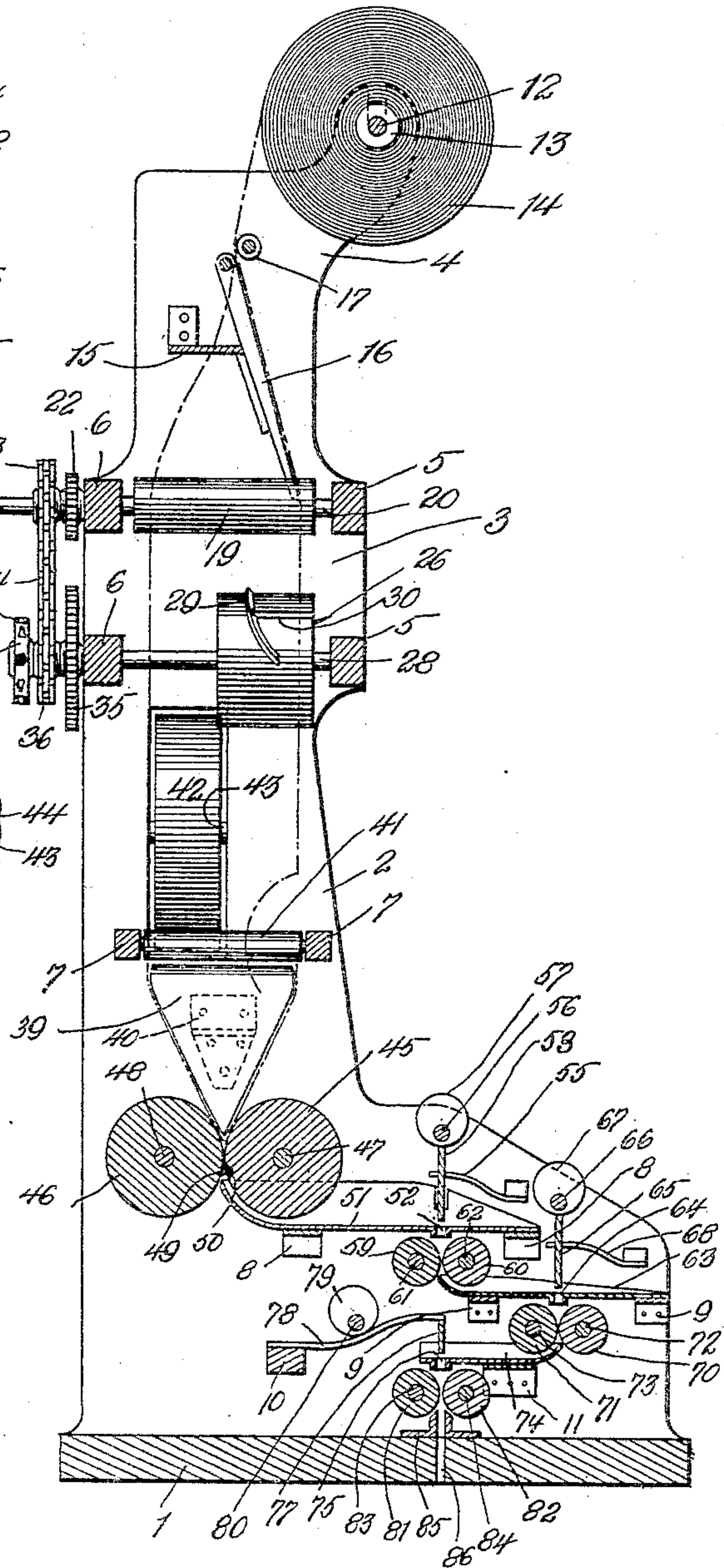


Fig. 2.

Witnesses

Samuel Payne
W. H. Butler

Inventor,
A. Stewart.

34

H. C. Everett & Co.

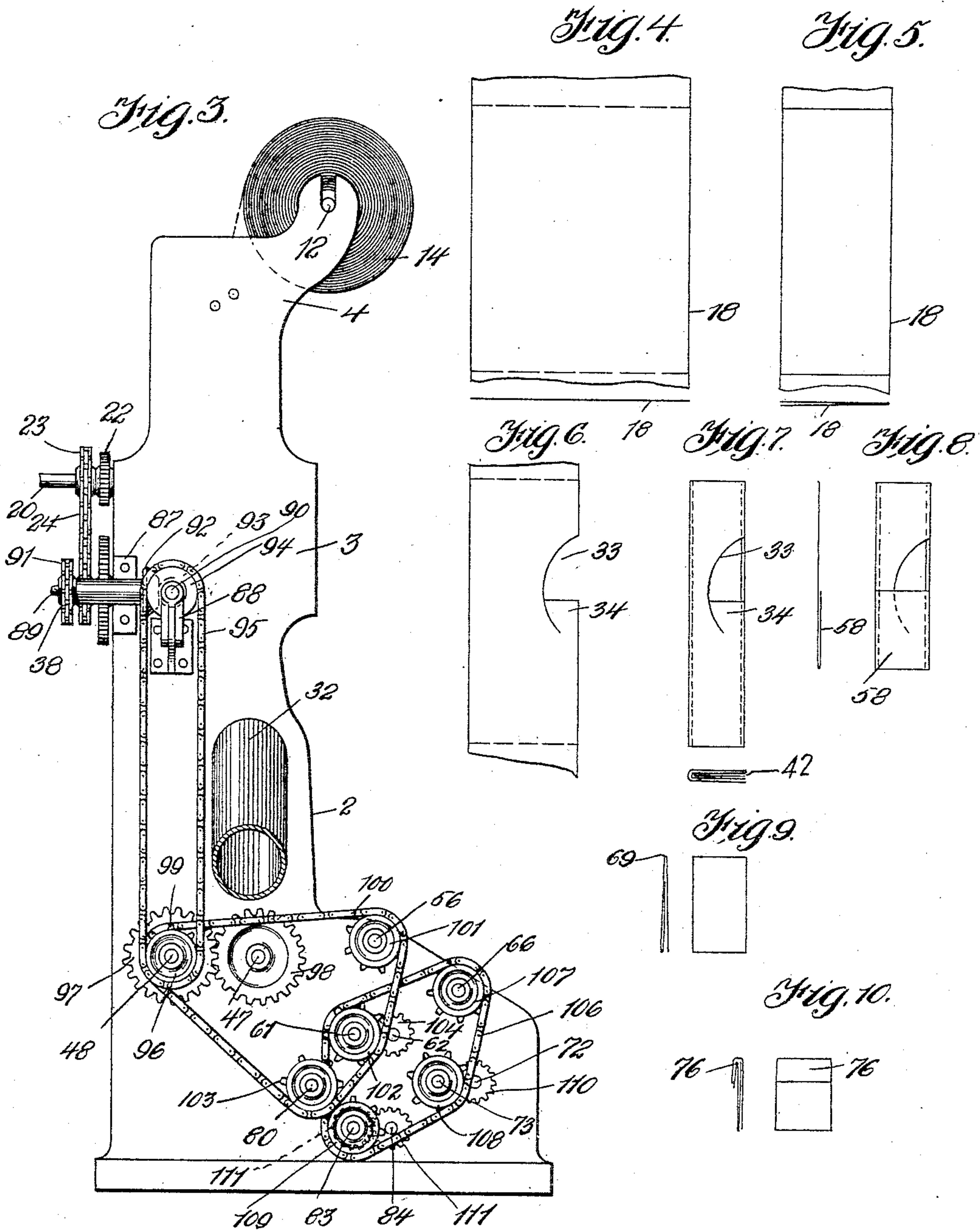
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Samuel Payne
R. H. Butler

Inventor

A. Stewart.

By

H. C. Everett & Co.

Attorneys

UNITED STATES PATENT OFFICE.

ALBERT STEWART, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR CUTTING AND FOLDING SANITARY-SHIELD PACKAGES.

934,368.

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To all whom it may concern:

Be it known that I, ALBERT STEWART, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Cutting and Folding Sanitary-Shield Packages, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a machine for cutting and folding sanitary shield packages, and the primary object of my invention is to provide a novel machine for expeditiously cutting and folding a piece of paper into the form of a package that can be placed in machines for dispensing sanitary shields.

Another object of my invention is the provision of positive and reliable means for successively folding a piece of paper and during the folding operation insert another piece of paper, both pieces of paper being folded into a comparatively small and flat package.

A further object of this invention is to provide a machine of the above type that can be easily operated to produce perfect sanitary shield packages with as little waste of paper as possible.

A still further object of my invention is to provide a strong and durable machine that will be free from injury by ordinary use and highly efficient for the purposes for which it is intended.

With the above and other objects in view which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be presently described and then specifically claimed.

In the drawings:—Figure 1 is a front elevation of a machine constructed in accordance with my invention, Fig. 2 is a vertical sectional view of the same, Fig. 3 is a side elevation of the machine, Fig. 4 is a diagrammatic view of a piece of paper adapted to be cut and folded into a sanitary shield package, Fig. 5 is a similar view of a piece of paper illustrating the first fold, Fig. 6 is a plan of a folded piece of paper illustrating the cut or second fold, Fig. 7 illustrates the third operation with the cut piece of paper folded and a piece of toilet paper inserted, Fig. 8 illustrates the fourth folding operation, Fig. 9 the fifth folding operation, and Fig. 10 the sixth.

In the accompanying drawings, 1 design-

ates a base plate provided with parallel vertical side frames 2 and 3, these frames terminating at the upper ends thereof in slotted brackets 4. The frames 2 and 3 are connected by transverse braces 5, 6, 7, 8, 9, 10 and 11, all of these braces being used for purposes that will hereinafter appear.

Revolubly and detachably mounted in the brackets 4 is a shaft 12 for holding the spool 13 of a roll of tissue paper 14.

Fixed between the frames 2 and 3 is a transverse support 15 for a doubling or folding device 16 similar to the ordinary folding device of a printing press, the device being adapted to longitudinally fold paper from the roll 14 as said paper passes through the device. To guide the paper on to the device, a transverse roller 17 is journaled between the frames 2 and 3 at the upper end of the device 16. After the paper passes over the folding device 16 and assumes the form shown in Fig. 5, where it is shown as longitudinally folded, as at 18, the folded piece of paper passes between feed rolls 19, these rolls being mounted upon shafts 20 and 21 journaled between the braces 5 and 6. The feed rolls 19 are driven in unison through the medium of gear wheels 22 carried by the shafts 20 and 21. The shaft 20 serves functionally as a drive shaft and can be driven from any suitable source of power. This shaft is provided with a sprocket wheel 23 in connection with which a sprocket chain 24 is used for driving the mechanism of my machine. The paper after passing through the feed rolls 19 passes between two rolls 25 and 26, said rolls being mounted upon shafts 27 and 28 respectively, journaled in the lower set of braces 5 and 6. These rolls 25 and 26 are arranged to cut the edge of the folded piece of paper, the roll 26 being provided with a curved blade 29 and a straight blade 30, these blades when confronting the roll 25 entering recesses 31 provided therefor in the said roll 25. The blades 29 and 30 sever a portion of the paper, which is removed from the machine by a suction pipe 32 arranged directly below the rolls 25 and 26, this suction pipe being connected to an exhaust fan or pump (not shown). In cutting the folded piece of paper as shown in Figs. 6 and 7, the piece of paper is provided with a central opening 33, that is adapted to register with the opening in a hopper seat, while the tongue 34 that is formed is adapted to extend downwardly in

the opening of a hopper seat at the front edge thereof, for the well known purposes for which sanitary shields are employed.

In order that the rolls 25 and 26 can be driven in unison, the shafts 27 and 28 are provided with meshing gear wheels 35, and the shaft 28 is provided with sprocket wheels 36 and 37, the former being driven by the sprocket chain 24, while the latter is provided with a sprocket chain 38 for driving the remainder of the mechanism of my machine.

The third operation upon the cut and double piece of paper is now performed by another folding device 39 supported by a bracket 40, carried by the side frame 2 directly beneath the braces 7. The piece of paper is guided into the folding device 39 by rollers 41 journaled between the braces 7. These rollers also guide a piece of toilet paper 42 into engagement with the folded and cut piece of paper shown in Fig. 6 of the drawings. The toilet paper is carried in the form of a roll which has a shaft 43 journaled and detachably mounted in brackets 44, carried by the outer side of said frame 2. As the two pieces of paper pass to the folding device 39, they are folded together as shown in Fig. 7 of the drawings. From the folding device 39 the paper passes between two shearing rolls 45 and 46 mounted upon shafts 47 and 48, journaled between the side frames 2 and 3. The roll 46 is provided with a longitudinal knife blade 49 adapted to enter a recess 50 formed longitudinally of the roll 45. The knife blade 49 is adapted to sever the two folded pieces of paper in lengths according to that shown in Fig. 7 of the drawings. The severed piece of paper passing from the rolls 45 and 46 passes on to a platform 51 mounted upon the braces 8. This platform adjacent to the outer end thereof is slotted, as at 52, and arranged directly above the slot is a vertical folding blade 53 movably mounted in oppositely disposed guide-ways 54 formed in the confronting faces of the frames 2 and 3. The folding blade 53 is normally held in an elevated position in the guide-ways 54 by two flat springs 55 arranged at the sides of the frames 2 and 3. Journaled in the side frames 2 and 3 directly above the blade 53 is a shaft 56, and mounted upon this shaft are two eccentrics 57 for engaging the upper edge of the folding blade 53 and forcing the same downwardly when the shaft 56 is revolved. Immediately upon the paper passing on to the platform 51, the folding blade 53 forces the piece of paper through the slot 52, folding the end of the piece of paper as designated by the reference numeral 58, in Fig. 8 of the drawings. From the slot 52 the folded piece of paper passes between feed rolls 59 and 60 mounted upon shafts 61 and 62 journaled in

the side frames 2 and 3. From the feed rolls 59 and 60, the folded piece of paper passes on to the platform 63 carried by the braces 9. This platform is also slotted intermediate its ends, as at 64, for another folding blade 65, which is lowered through the medium of a shaft 66 journaled in the frames 2 and 3, said shaft being provided with eccentrics 67. Springs 68 similar to the springs 55 are employed for elevating the folding blade 65. After the piece of paper is again folded, as indicated by the reference numeral 69, Fig. 9, the paper from the slot 64 passes between feed rolls 70 and 71 mounted upon shafts 72 and 73, journaled in the frames 2 and 3. From the rolls 70 and 71 the folded piece of paper passes on to the platform 74 carried by the braces 11. This platform at the outer end thereof is slotted, as at 75, whereby the end of the piece of paper can again be folded, as designated by the reference numeral 76, Fig. 10 of the drawings, this last fold completing the sanitary shield package. The last fold is accomplished by a folding blade 77 carried by a resilient arm 78 supported from the brace 10. The resilient arm 78 is lowered through the medium of an eccentric 79 mounted upon a shaft 80 journaled in the side frames 2 and 3. The folded package from the slot 75 passes between feed rollers 81 and 82 mounted upon shafts 83 and 84, journaled in the side frames 2 and 3, the folded package passing through guides 85, carried by the base plate 1 and through a slot 86 formed in said base plate.

The transmission of power from the shaft 28 to the cutting rolls 45 and 46, the various feed rolls, and the folding blade actuating shafts is accomplished by the single construction arranged upon the outer side of the frame 3.

The frame 3 adjacent to the lower set of braces 5 and 6 is provided with bearings 87 and 88 for shafts 89 and 90 respectively. Upon the shaft 89 is mounted a sprocket wheel 91 for the sprocket chain 38, and a beveled gear wheel 92 adapted to mesh with a similar gear wheel 93 upon the shaft 90. This shaft 90 is provided with a sprocket wheel 94 over which travels a sprocket chain 95 transmitting power to the shaft 48 through the medium of a sprocket wheel 96 carried by said shaft.

The shaft 48 is provided with a gear wheel 97 adapted to mesh with a gear wheel 98 carried by the shaft 47, whereby the shearing rolls 45 and 46 can be driven in unison. The shaft 48 is provided with another sprocket wheel 99 over which passes a sprocket chain 100, said sprocket chain also passing over sprocket wheels 101, 102 and 103 mounted upon the shafts 56, 61 and 80 respectively.

The shafts 61 and 62 are provided with

meshing gear wheels 104 for operating the feed rollers 59 and 60 in unison, and said shaft is provided with a fifth sprocket wheel 105, which through the medium of a sprocket chain 106 is adapted to impart a rotary movement to sprocket wheels 107, 108, and 109 mounted upon the shafts 66, 73 and 83 respectively. The shafts 73 and 72 are provided with meshing gear wheels 110 in order that the feed rolls 70 and 71 can be driven in unison, and for a like reason the shafts 83 and 84 are provided with meshing gear wheels 111.

It is apparent from the novel construction of my machine that the paper is successively operated upon to produce a complete sanitary shield package when the same leaves the machine through the slot 86.

While in the drawings forming a part of this application there is illustrated the preferred embodiments of my invention, it is obvious that the same can be varied or changed as to shape, proportion and manner of assemblage without departing from the spirit of the invention.

Having now described my invention what I claim as new, is:—

1. A machine of the type described comprising side frames, braces connecting said side frames, brackets carried by the upper ends of said side frames for revolubly supporting a roll of paper, a folding device arranged between said side frames for doubling longitudinally the paper from said roll, feed rollers journaled between some of said braces, cutting rolls journaled between others of said braces for cutting the paper passing from between said feed rolls, guide rollers journaled between others of said braces and adapted to receive paper from said cutting rolls and additional paper adapted to be folded with the cut paper, a folding device located between said side frames beneath said guide rollers for again folding said first-mentioned paper longitudinally, shearing rolls journaled between said side frames for cutting the paper into desired lengths, platforms supported by others of said braces and adapted to receive the longitudinally folded paper, a folding blade arranged above each of said platforms for forcing the longitudinally folded paper successively from one platform to another and folding the same transversely, feed rolls journaled between said side frames for carrying the paper from one platform to another, means for operating said feed rolls, cutting rolls and shearing rolls in unison, means for operating said folding blades, and a suction pipe supported by one of said frames beneath said cutting rolls for removing the severed portion of said paper, substantially as described.

2. A machine of the type described comprising side frames, braces connecting said

side frames, brackets carried by the upper ends of said side frames for revolubly supporting a roll of paper, a folding device arranged between said side frames for doubling longitudinally the paper from said roll, feed rollers journaled between some of said braces, cutting rolls journaled between others of said braces for cutting the paper passing from between said feed rolls, guide rollers journaled between others of said braces and adapted to receive paper from said cutting rolls and additional paper adapted to be folded with the cut paper, a folding device located between said side frames beneath said guide rollers for again folding said first-mentioned paper longitudinally, shearing rolls journaled between said side frames for cutting the paper into desired lengths, platforms supported by others of said braces and adapted to receive the longitudinally folded paper, a folding blade arranged above each of said platforms for forcing the longitudinally folded paper successively from one platform to another and folding the same transversely, feed rolls journaled between said side frames for carrying the paper from one platform to another, means for operating said feed rolls, cutting rolls and shearing rolls in unison, and means for operating said folding blades.

3. A machine of the type described comprising side frames, brackets carried by said side frames for supporting a roll of paper at the upper end of said frames, a folding device supported between said frames for longitudinally folding paper from said roll, cutting rolls revolubly supported between said frames for cutting the folded edge of the paper passing over said folding device, rollers revolubly supported between said frames and adapted to receive the folded and cut paper from the cutting rolls and also an additional piece of paper to be folded in with said cut and folded piece of paper, a folding device supported between said frames for again folding the first-mentioned paper longitudinally, shearing rolls journaled between said frames for cutting the longitudinally folded paper into lengths, a mechanism arranged between said frames and adapted to receive lengths of paper from said shearing rolls and fold said lengths into packages, said mechanism including spring supported and eccentric actuated folding blades and feed rolls, and means for operating said mechanism in unison with said cutting rolls and said shearing rolls.

4. A machine of the type described comprising side frames, brackets carried by said side frames for supporting a roll of paper at the upper end of said frames, a folding device supported between said frames for longitudinally folding paper from said roll, cutting rolls revolubly supported between said frames for cutting the folded edge of

the paper passing over said folding device, rollers revolubly supported between said frames and adapted to receive the folded and cut paper from the cutting rolls and also
 5 an additional piece of paper adapted to be folded in with said cut and folded piece of paper, a folding device supported between said frames for again folding the paper longitudinally, shearing rolls journaled be-
 10 tween said frames for cutting the longitudinally folded paper into lengths, a mechanism arranged between said frames and adapted to receive lengths of paper from said shearing rolls and fold said lengths into packages, and
 15 means for operating said mechanism in unison with said cutting rolls and said shearing rolls.

5. In a machine of the character described, means for supporting a roll of paper and for
 20 feeding the paper from the roll, a folding device arranged to fold the paper longitudinally, a cutting device arranged to cut out a portion of the folded paper from the folded edge of the same to form a large opening in
 25 the center portion of the paper, and means for subsequently guiding another piece of paper into the longitudinally folded and cut piece, and other folding means arranged to fold the two pieces into a small package, sub-
 30 stantially as described.

6. In a machine for the purpose described, mechanism for feeding a continuous piece of paper, means to cut out and remove portions
 35 of the paper to form openings at intervals in said piece, means for guiding a second piece of paper in juxtaposition to the first piece after the openings have been formed therein, cutting means to sever the two pieces
 40 at opposite sides of the respective openings to divide said pieces into definite lengths, and means to interfold the two cut pieces into a package, substantially as described.

7. In a machine for the purpose described, the combination of means for forming two
 45 series of paper pieces with the members of each series in juxtaposition to the corresponding members of the other series, means for cutting and removing a portion from each piece of one series to form an opening
 50 therein, and means for interfolding the corresponding pieces of the two series to form a package, substantially as described.

8. In a machine for the purpose described, means for feeding a continuous web of
 55 paper, a folder arranged to fold said web longitudinally, cutting means for successively cutting out portions of the folded paper at the folded edge thereof, means for guiding a second web into juxtaposition to the first
 60 web after the same has been folded and cut as set forth, cutting means for simultaneously cutting the two associated webs into pieces, and folding devices for subsequently forming successive folds in the cut pieces to form

them into a compact package, substantially 65 as described.

9. In a machine for the purpose described, means for feeding a continuous web of paper, a folder arranged to fold said web longitudinally, cutting means for successively
 70 cutting out portions of the folded paper at the folded edge thereof, means for guiding a second web into juxtaposition to the first web after the same has been folded and cut as set forth, means for folding the two webs
 75 one within the other, cutting means for simultaneously cutting the two associated webs into pieces, and folding devices for subsequently forming successive folds in the cut pieces to form them into a compact pack-
 80 age, substantially as described.

10. In a machine for the purpose described, mechanism for feeding a continuous web of paper, cutters arranged to form open-
 85 ings at intervals in said web, means for removing from the machine the cut out portions of the paper, means for guiding a second web of paper in juxtaposition to the first web after the openings have been formed therein, and cutting and folding de-
 90 vices arranged to cut the two webs of paper into pieces of definite lengths and fold the two cut pieces together into a package, substantially as described.

11. In a machine of the character de- 95 scribed, means to feed and guide two continuous webs of paper, means to successively produce openings in one of said webs, a folder for subsequently folding one of the webs within the other, and cutting and fold-
 100 ing devices for cutting the associated webs into definite lengths and for successively folding such lengths into packages, substantially as described.

12. In a machine of the character de- 105 scribed, the combination of means for producing an opening in a piece of paper, means for bringing another piece of paper into juxtaposition with that part of the first-mentioned piece of paper which has the
 110 opening therein, means for interfolding the two pieces of paper, means for cutting the interfolded papers at opposite sides of the opening to produce definite lengths of interfolded pieces of paper, and means for fold-
 115 ing the interfolded pieces into a package, substantially as described.

13. In a machine of the character de- 120 scribed, the combination of means for feeding a continuous web of material, means for successively cutting portions out of the web, means for removing the cutout portions of the web, means for guiding another web into juxtaposition with the cut portion of the
 125 first mentioned web and for interfolding the two webs, and means for afterward cutting the two webs at opposite sides of the opening into definite lengths and for folding the

interfolded cut portions into a package, substantially as described.

14. In a machine for the purpose described, the combination of means for forming two
5 series of paper pieces with the members of each series in juxtaposition to the corresponding members of the other series, means for cutting and removing a portion from
10 therein, and means for interfolding the cor-

responding pieces of the two series into a package with the piece having an opening innermost, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ALBERT STEWART.

Witnesses:

MAX H. SROLOVITZ,
K. H. BUTLER.