

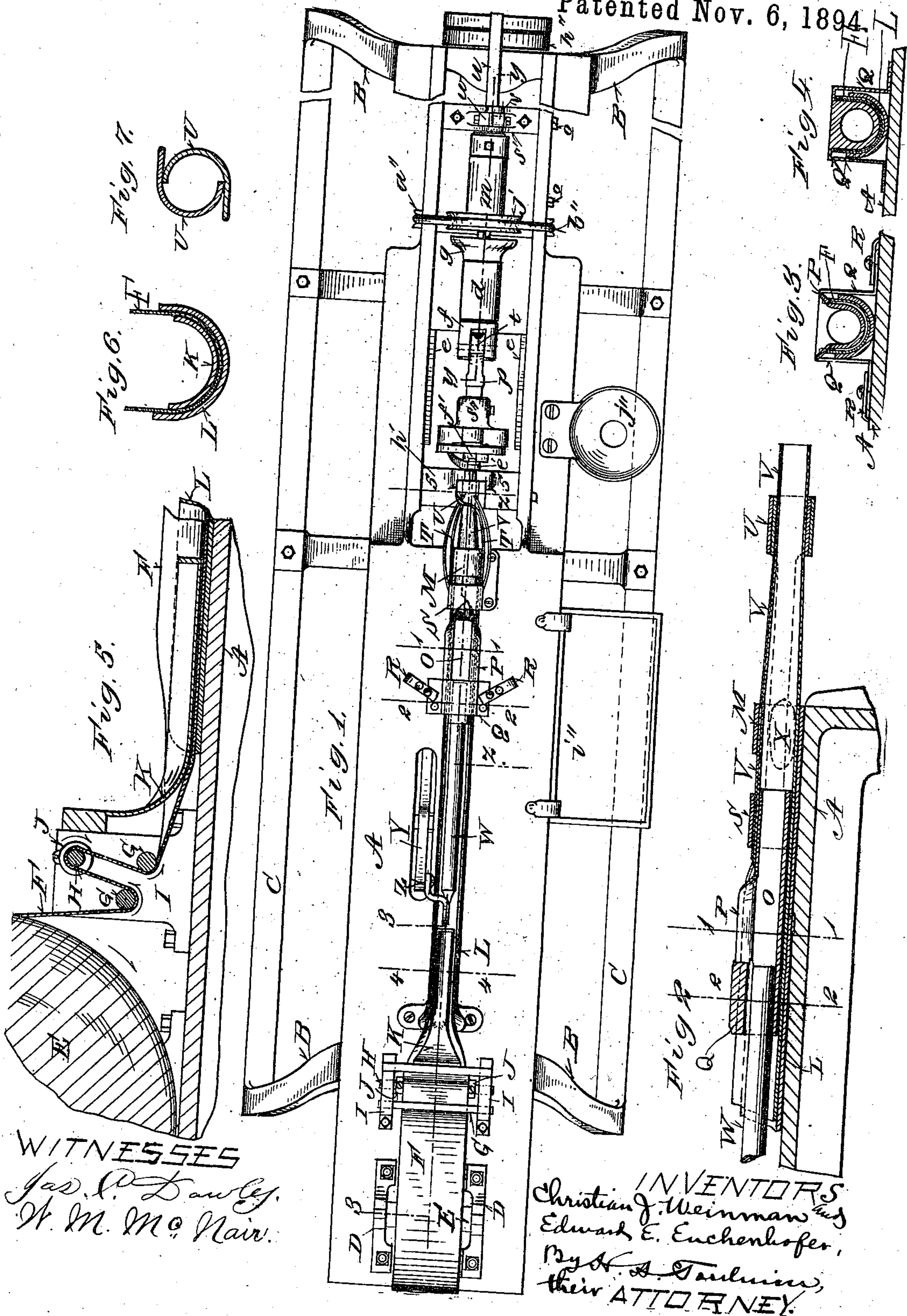
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3 Sheets—Sheet 1.

C. J. WEINMAN & E. E. EUCHENHOFER.
WRAPPING MACHINE.

No. 528,751.

Patented Nov. 6, 1894.



WITNESSES
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INVENTORS
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Edward E. Euchenhofer,
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their ATTORNEY.

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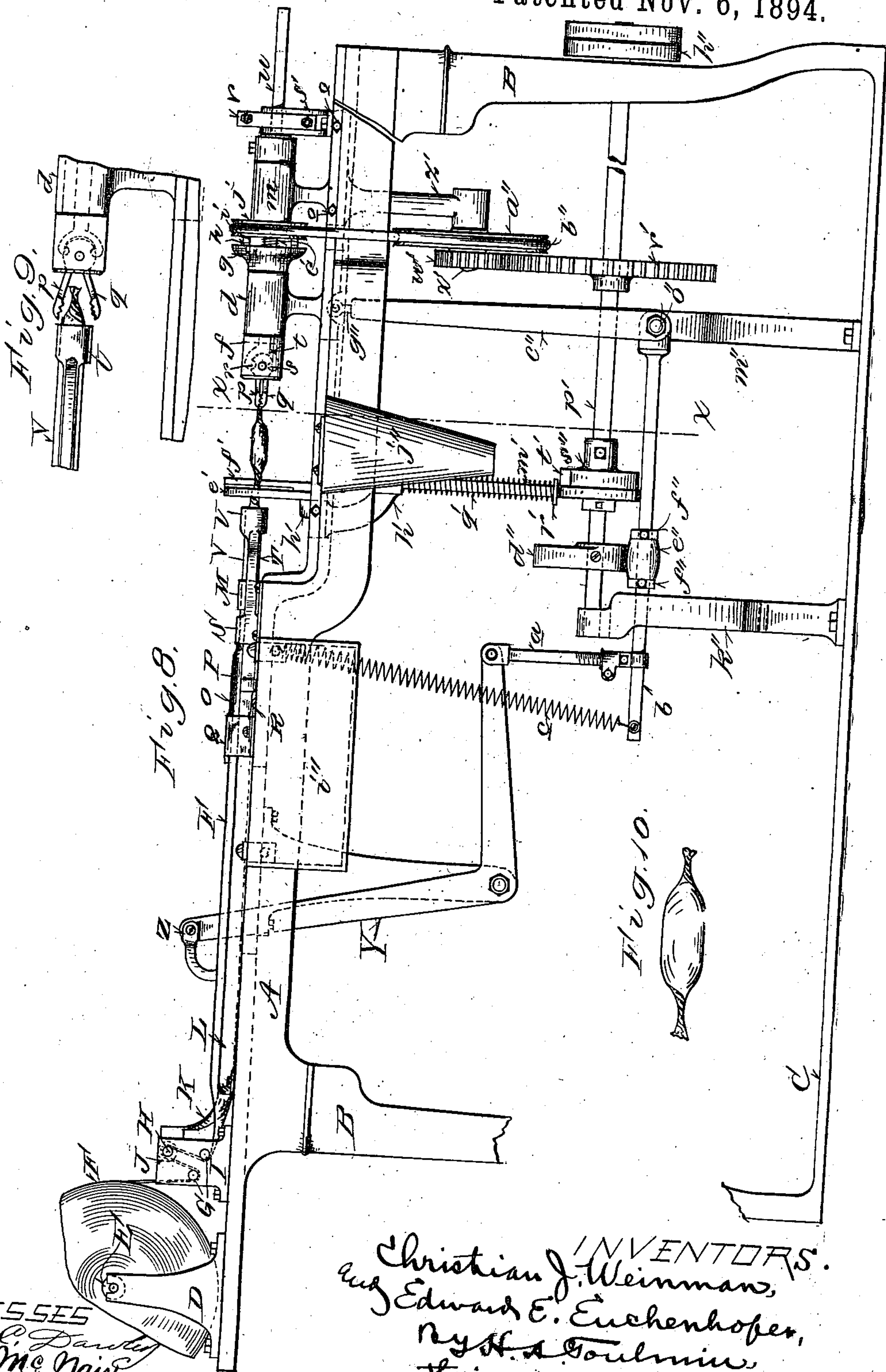
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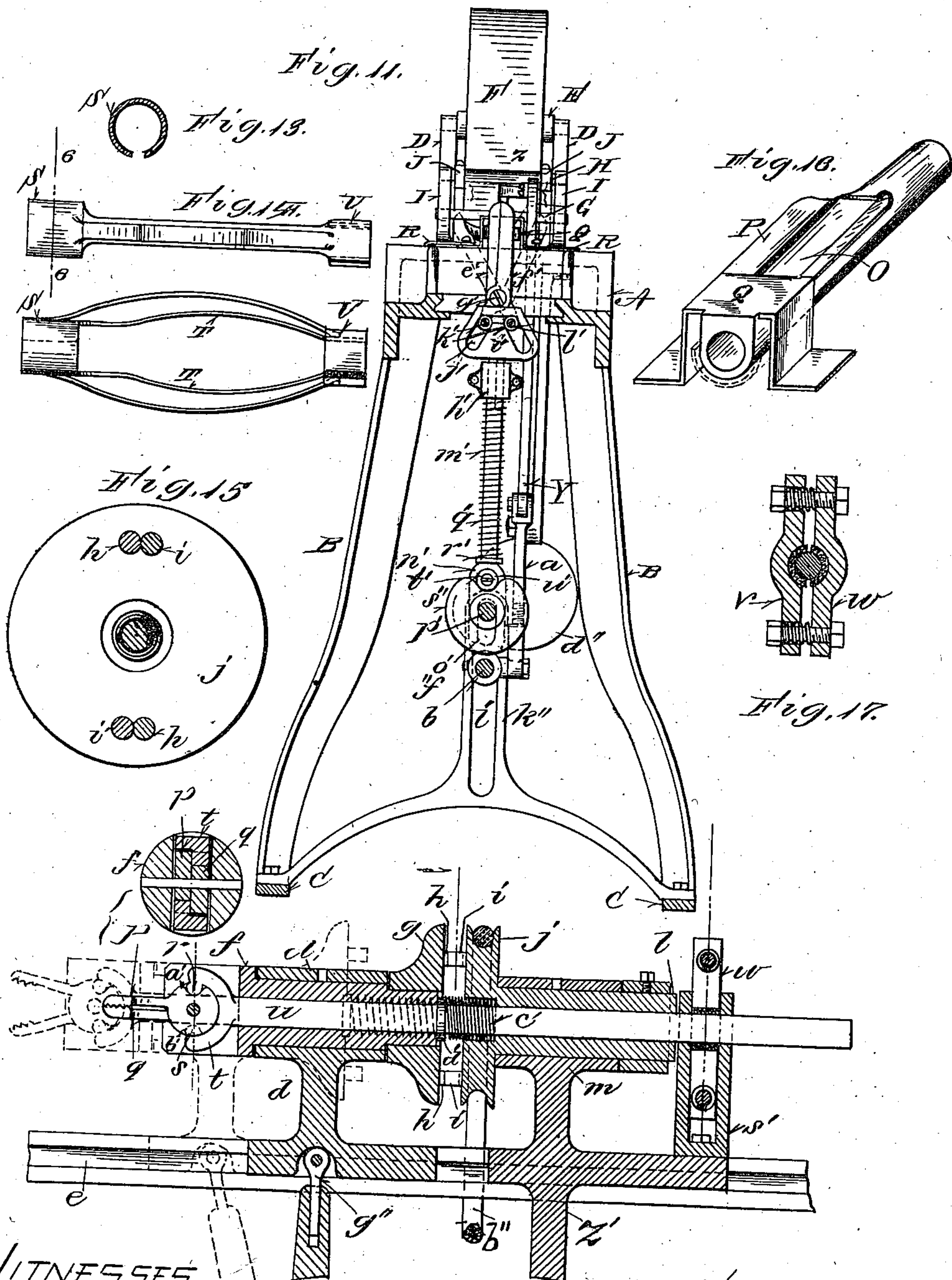
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WITNESSES

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Fig. 12. INVENTORS
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UNITED STATES PATENT OFFICE.

CHRISTIAN J. WEINMAN AND EDWARD E. EUCHENHOFER, OF DAYTON, OHIO.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,751, dated November 6, 1894.

Application filed August 29, 1893. Serial No. 494,335. (No model.)

To all whom it may concern:

Be it known that we, CHRISTIAN J. WEINMAN and EDWARD E. EUCHENHOFER, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Wrapping-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in machines for wrapping or enveloping candy, either in the form of drops or sticks, and fruit, as oranges or lemons, with paper, and for twisting the ends of the wrapper so that it will remain on the article.

The principles, the organizations, and the details will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings on which like reference letters indicate corresponding parts: Figure 1, is a plan view of our improved machine; Fig. 2, a sectional view on the line *z z* of Fig. 1 showing the paper-guiding conduit, the feeding hopper and the runner rod; Fig. 3, a transverse sectional view on the line 1, 1 of Figs. 1 and 2; Fig. 4, a transverse sectional view on the line 2, 2, of Figs. 1 and 2; Fig. 5, a longitudinal sectional view of the paper guide and conduit, the feeding devices and a part of the frame, being taken on the line 3, 3, of Fig. 1. Fig. 6, is a transverse sectional view on the line 4, 4, of Fig. 1; Fig. 7, a transverse sectional view on the line 5, 5, of Fig. 1; Fig. 8, a side elevation of the machine; Fig. 9, a detail view showing the paper grippers, the paper ready to be gripped and the holders; Fig. 10, a detail view of the product of the machine, being a candy drop wrapped in paper with the paper twisted. Fig. 11, is a transverse sectional view on the line *x x* of Fig. 8, the receptacle *j''* being removed. Fig. 12, is a vertical sectional view on the line *y y* of Fig. 1; Fig. 13, a sectional view on the line 6, 6, of Fig. 14; Fig. 14, a side and plan view respectively of the holder by which the unwrapped article is held while the paper is being twisted; Fig. 15, a detail view of the clutch for rotating the gripper spindle; Fig. 16, a detail perspective view of the hopper

with adjacent parts; and Fig. 17, a sectional view of the clamp for the gripper spindle.

The letter A designates the bed or top of our machine. It is mounted upon legs B, preferably connected together by base rails C. On the bed plate A are mounted standards D which support a drum E on which is wound and supported a long strip of paper F which passes under guide-bars G and over a guide-bar H, all supported in a frame I, mounted on the bed piece. Collars J, held by set screws, serve to guide the paper strip by engaging with its edges. The collars may be set in or out to agree with the width of the strip. (See Fig. 1.)

Secured to the frame I, is a guide core K, preferably made of sheet metal and curved in the first portion of it so as to guide the paper strip smoothly under it. The cross section of the core is substantially semicircular, as suggested in Figs. 1 and 5, and clearly shown in Fig. 6. About the point where the curve of this core terminates commences the paper guide conduit L also preferably made of sheet metal and of substantially semicircular cross section, as suggested in Figs. 1, 2 and 5 and clearly shown in Fig. 6 and other detail figures. A space between the core K and the guide conduit L is left sufficient for the ready passage of the paper strip. The guide conduit extends to the point M where it is formed into a tube.

Just before the part M of the conduit, we place in the conduit what we term the hopper which is shown at O, Figs. 1, 2, 3, and 16. This hopper see Fig. 16 is substantially a tube, being cut open at one side and having its edges flared out to form an opening P for receiving the candy or other articles. The remainder of the hopper, the tubular part, projects onward in the conduit. The hopper is provided with a bracket Q which spans the conduit and fits upon the bed-plate where it is detachably secured by spring latches R. Thus the hopper is supported in the conduit with a space between the hopper and conduit for the passage of the paper just as is the case between the guide core K and the conduit.

At S a sleeve is placed over the conduit, the sleeve being open as seen in Fig. 13 so that it can be sprung to slip past the tubular part

M of the conduit. This sleeve performs two functions, first, that of engaging with the upper projecting edges of the paper strip and turning them toward each other so that the strip is changed from a gutter form in cross section into a tubular form as it passes between the hopper and the conduit at the point where the sleeve S spans or encircles the conduit; secondly, the function of the sleeve S is to support spring arms T which carry at their other ends, the overlapping jaws U thereby forming what we term the article holder. These overlapping jaws U hold the article after the paper is about it, while, in the initial operation, the paper blank ahead of the article is being twisted. When this paper blank is disposed of, and while the paper of the first article is being twisted, these jaws hold the second wrapped article, and so on as the machine is operated.

Now in order to project the article along from the mouth of the hopper through the tubular part of the hopper and thence into the paper tube, which latter is shown at V, being that part of the strip from the sleeve S to the end of it in the direction of the right hand as viewed in Figs. 1 and 2, we provide a feed rod or plunger W which reciprocates in the conduit and through the hopper so as to force the articles from the hopper into the paper tube to about the point indicated at X in Fig. 2. The plunger is reciprocated, preferably by means of a bell crank lever Y, with which it engages as seen at Z. This lever is actuated by a pitman a, connected with a pivoted bar b, which is depressed by a cam-mechanism and elevated by a spring c, as will hereinafter appear, so that the plunger is automatically and regularly reciprocated.

The next mechanism to operate in the machine is the reciprocating gripping device. This consists of a head d, mounted in ways e, of the bed A, and carrying a sleeve or hollow shaft f, rotated by a flange g and pins h, which are engaged by pins i, carried by a pulley j, operated by a belt b'' and mounted on a hollow shaft or sleeve l mounted in a stationary head m, itself secured in a fixed position by a set screw o in the ways e of the bed A. The sleeve or hollow shaft f has pivoted therein two grippers p and q the enlarged inner ends of which are respectively notched to receive the knobs r and s of the yoke t, forming a part of the gripper shaft u, mounted in the sleeves or hollow shafts f and l. This shaft operates to open and close the grippers. Referring to Fig. 12 it will be seen that the grippers are closed. Let it be supposed that they are to be opened and that the sliding head d is to be advanced so that the grippers can take hold of the projecting end of the paper, as seen in Figs. 8 and 9. The shaft u is frictionally held by the friction clamp v, w, mounted in the hollow fixed standard s'. When the head d advances toward the paper

the shaft u is delayed by this friction clamp. This causes the grippers to open until the shoulders a' and b' strike the knobs r and s respectively. This done the shaft u is thrown through the clamp, the spring c' acting on the collar d' assisting in moving the rod through the clamp. When the grippers arrive at the paper they are to be closed from the position shown in Fig. 9 to that shown in Fig. 8. This is done when the head d returns and draws the grippers against the knobs r and s. This done the further return movement of the head d causes the grippers to press harder and harder against the knobs, the tendency being to make the grippers bite harder and harder upon the paper. When the pressure of the grippers against the knobs overcomes the friction in the friction clamp and the tension of the spring c', the shaft u moves back with the head. The paper tube is, during this return movement of the head and grippers, being drawn out of the conduit L and the holder U so that by the time the head d is at its returned position the paper and contained article have assumed the position shown in Fig. 8. At this time also the pins h are being engaged by the pins i and the grippers rotated so as to twist the paper at each side of the article, as also shown in Fig. 8.

The next device to come into operation is the shears or scissors by which the paper is clipped. This device consists of two pivoted blades e', f' which act like scissors, their pivot g' being fastened in a suitable part of the frame, say the upper part of the bracket h'. The shears are located so as to clip that part of the twisted paper which is between the article and the holder U, allowing a projecting end for the grippers to take hold of in the next operation.

Referring now to the mechanism for operating the shears and the grippers the letter i' designates a plate having oblique slots j' which receive the antifriction rollers k' of the studs l' in the lower ends of the shear blades. This plate i' is carried by the reciprocating rod m' mounted in the bracket h' and slotted at its lower end, as seen at o' to straddle the cam shaft p'. A spiral spring q' presses against the bracket h' and against a collar r' on the rod m' so as to depress the rod and quickly close the shears, so that they will clip the paper. A cam s'' mounted on the shaft p' engages an antifriction roller t' on a stud u' carried by the rod m' whereby the rod is lifted against the spring and the shears opened. Thus the shears are operated, being quickly closed by the spring action and being opened by the cam action.

In describing the operating mechanism it should have been stated that the standard k'', which supports the shaft p' is slotted as shown at l'' in Fig. 11 so as to guide the rod b. It should also have been stated that a standard m'' supports the bolt o'' of the bell-

crank lever formed of this rod and the arm c'' . The shaft p' also carries a gear wheel v' which meshes with a pinion w' carried on the shaft x' mounted in the bracket z' , which bracket is a part of the head m . A pulley a'' carried by the shaft x' drives a belt b'' by which the pulley j is rotated to rotate the grippers, as above stated. The head d is reciprocated simultaneously with the reciprocations of the plunger rod W by the arm c'' which is in effect a rigid extension of the pivoted rod b . In other words a bell crank lever is formed of the arm c'' and the rod b . Motion is given this bell crank lever by the cam d'' mounted in the shaft p' and engaging with an antifriction roller e'' playing between fixed collars f'' on the rod or portion of said bell crank lever marked b . To compensate for the arc described by the arm c'' of this bell-crank lever the pin g'' reciprocates in said arm see Fig. 12 and is pivoted to the head d . The shaft p' is preferably rotated by power applied to it through the pulley h'' .

But two devices remain to be mentioned, namely, the box i'' in which the articles are kept to form a supply for feeding the machine; and the receptacle j'' into which the wrapped articles drop, this receptacle being placed sufficiently at one side of the machine to catch the articles as they fly out of the machine on account of their high rotary speed at the moment when the paper is clipped.

We have incidentally described the operation of the machine in connection with the above description of its mechanism; but in order that it may be more fully understood we would observe that in the first place the paper strip is fed by hand before the machine is started up, that is, the initial feed is done by hand. After that the paper is drawn automatically through the conduit by the action of the grippers when the reciprocating gripper-head returns to what may be called the normal position. The paper having been fed in the first instance by hand, an article, say a candy drop, or a lemon or an orange or indeed anything that is to be wrapped, is dropped into the hopper when it is projected by the plunger rod to the position shown at X in Fig. 2. This done the gripper head advances and the grippers take hold of the projecting tubular part of the paper and draw out what may be called a blank, twisting and cutting it off. This blank goes to waste, but in drawing it out the paper is advanced in the conduit until the article is moved along with the paper tube from the point X to within the spring holder U . Here it is held until the gripper head again advances and takes hold of the projecting end of the paper and draws the paper out, taking with it the contained article. We have before stated that as the grippers advance to the paper the plunger rod reciprocates toward the hopper. Therefore as one article is drawn from the point X another will have taken its place, so that

as an article leaves the holder U another fills and enters the holder. Thus while one article is being wrapped by the twisting process another is in the holder and the paper tube is being clamped about it by the holder so that the paper is held from rotation and from twisting by the holder, causing the twists to take place only in the unfilled part of the tube at each side of the suspended article, as shown in Fig. 8. These operations are repeated in rapid succession and the articles are wrapped with great rapidity and with uniformity, as has been ascertained by practical tests of this machine.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a wrapping machine, the combination with a conduit to guide and shape the paper, a hopper and feeding device to contain and project the articles within the paper, a holding device for the paper and enveloped article, and grippers to take hold of the paper, means to reciprocate and rotate one of said devices so engaging with the paper, whereby the paper containing the article is drawn out and twisted, and a shearing or clipping mechanism to sever the paper, substantially as described.

2. In a wrapping machine, the combination with a conduit to guide and shape the paper, a hopper and feeding device to project the articles within the paper, a holding device to hold the paper and enveloped article from rotating and grippers to take hold of the paper, and having a reciprocating and rotary movement to draw the paper and contained article out of the holding device and then to twist the paper, and the shearing or clipping device to sever the paper.

3. In a wrapping machine, the combination with a paper conduit whose cross section changes from gutter form to tubular form, a hopper and a plunger to feed articles to the tubular part of the paper, a yielding holding device to receive and clamp the paper and contained article, and grippers to take hold of the paper, and shearing or clipping devices to sever the paper, there being a rotary and reciprocating movement between the grippers and the holding device, whereby the paper with the contained article is drawn out of the holding device and the paper is twisted.

4. In a wrapping machine, the combination with a conduit whose cross section changes from the form of a gutter to a tube, a hopper and a reciprocating plunger to feed articles into the tubular part of the paper formed by said conduit, a yielding holding device for the paper and contained article, reciprocating and rotating grippers to grip and draw out the paper and contained article from the holding device and a shear or clipping device to sever the paper.

5. In a wrapping machine, the combination with a conduit whose cross section changes

from gutter form to a tube, a hopper within the conduit, a plunger within the conduit and working through the hopper, a yielding holder beyond the conduit to clamp the paper and contained article, a reciprocating head carrying grippers to grip the paper and draw it and the contained article out of the holder, devices to rotate the grippers after drawing out the paper and article, and shears to sever the paper.

6. In a wrapping machine, a conduit whose cross section changes from open to closed form, a guiding core in the open form, a tubular hopper open at one side and suspended within said conduit, and a feed device to move articles through the hopper into the part of the paper which has been formed for it.

7. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross-section changes from open to closed form, a guiding core in the open portion of said conduit, a tubular hopper in the conduit farther along, a reciprocating plunger to move articles through the hopper and beyond it into the closed portion of the conduit, substantially as shown and described.

8. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross-section changes from open to closed form, a guiding core in the open portion of the conduit, a tubular hopper in the conduit farther along, a reciprocating plunger to move articles through the hopper and beyond it into the closed portion, a holding device located at the end of the conduit and arranged to receive from the conduit the wrapping paper and contained article, and clasp the latter and hold it while the paper is being twisted.

9. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross-section changes from open to closed form, a guiding core in the open portion of said conduit, a tubular hopper in the conduit farther along, a reciprocating plunger in the conduit, a holding device located at the end of the conduit, and composed of a plurality of yielding and overlapping jaws, the said plunger operating to project the articles through the conduit so that they will enter the holding device.

10. The combination with a reciprocating head, a rotating hollow shaft mounted therein, grippers carried by said hollow shaft, a gripper shaft in the hollow shaft and provided with a yoke which engages with the grippers

proper, and means to hold or delay the gripper shaft after and during a slight movement of the head, so that the difference in the time of moving will effect the opening and closing of the grippers proper.

11. In a wrapping machine, the combination with a reciprocating head and a nonreciprocating head, grippers carried by the former and a rotating part carried by the latter, devices between said part and the grippers to rotate them at predetermined intervals, a shaft to actuate the grippers running through both heads, and devices to delay the reciprocating movements of said shaft with respect to the reciprocating movements of the traveling head.

12. In a wrapping machine, the combination with a reciprocating and a nonreciprocating head, a sleeve carried by each, grippers pivoted in one sleeve and the driving pulley on the other sleeve, devices between said pulley and the gripper-sleeve to rotate the latter at predetermined intervals, and the gripper shaft passing through said sleeves engaging with said grippers respectively, friction devices to delay the movement of said shaft with respect to the movements of said head, and a spring to assist in moving the shaft in one direction and to resist it in the other direction.

13. In a wrapping machine, the combination with two pivoted devices forming grippers and having notches in their heel portions, of a gripper shaft having a yoke provided with knobs which engage with said notches, the notches forming shoulders to limit the opening of the grippers.

14. In a wrapping machine, the combination with the frame, a rotating cam, a bell-crank lever operated thereby in one direction and a spring to operate it in the other, and a reciprocating head carrying grippers and connecting with said lever, a shaft connecting with the grippers and means to delay the initial movements of the shaft so as to open and close the grippers, and means to rotate the head which carries the grippers.

In testimony whereof we affix our signatures in presence of two witnesses.

CHRISTIAN J. WEINMAN.
EDWARD E. EUCHENHOFER.

Witnesses:

E. J. FINKE,
W. H. H. ECKI.