(No Model.) 7 Sheets—Sheet 1.

M. KIRSHNER.

MACHINE FOR WRAPPING SOAP, &c.

No. 565,082. Patented Aug. 4, 1896.

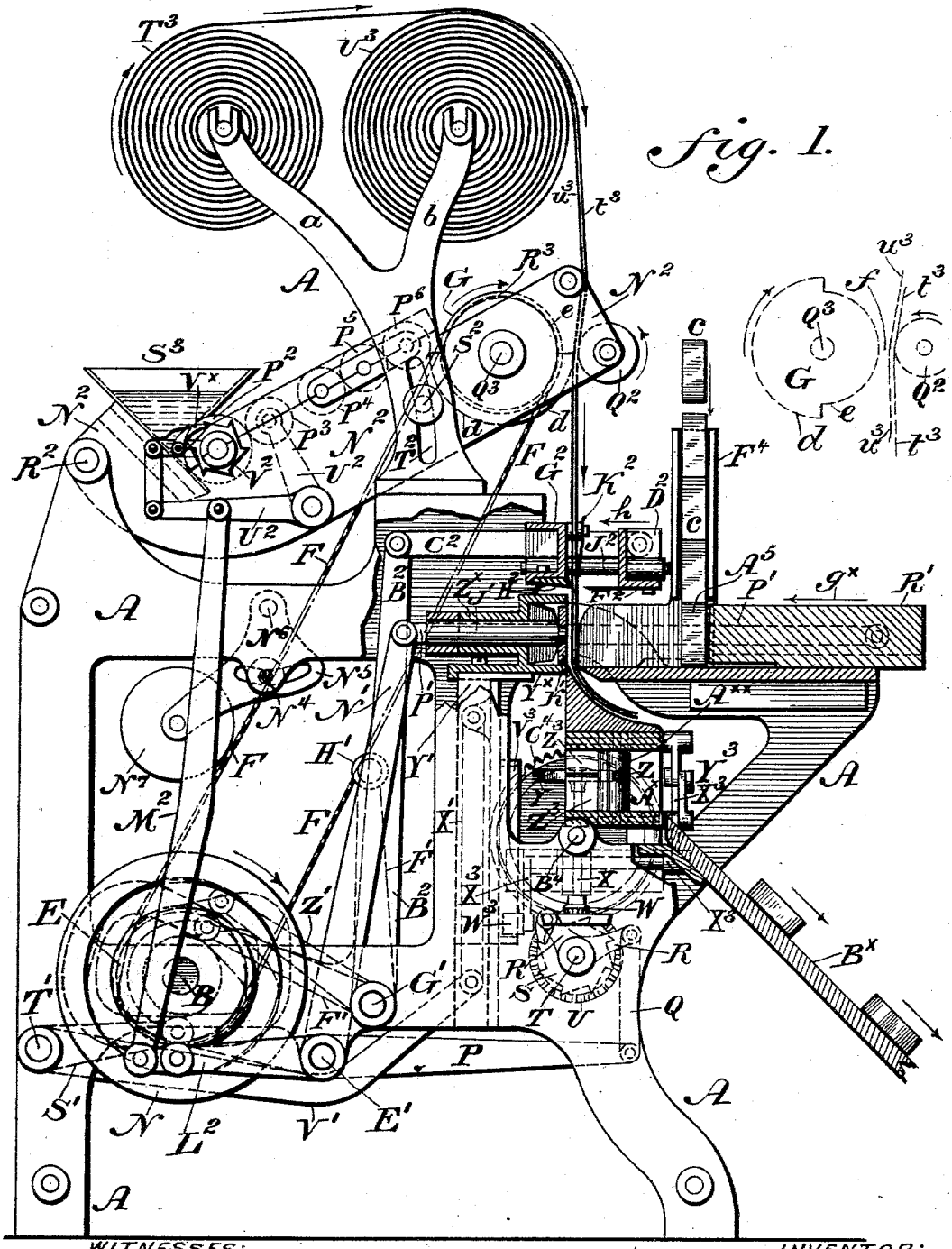

Fig. 1.

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(No Model.) 7 Sheets—Sheet 2.

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Fig. 2.

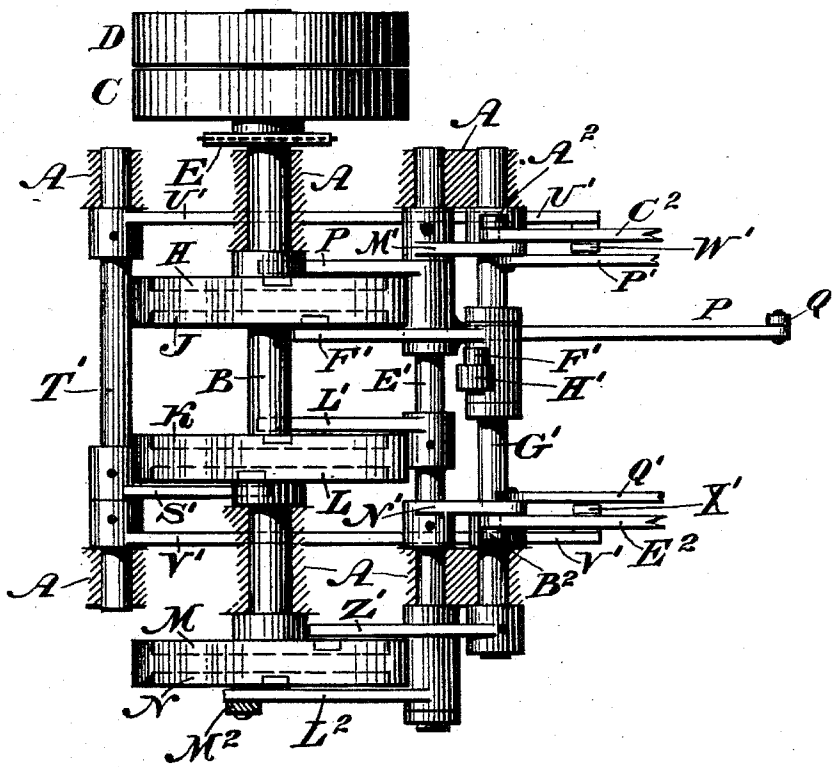

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Fig. 3.

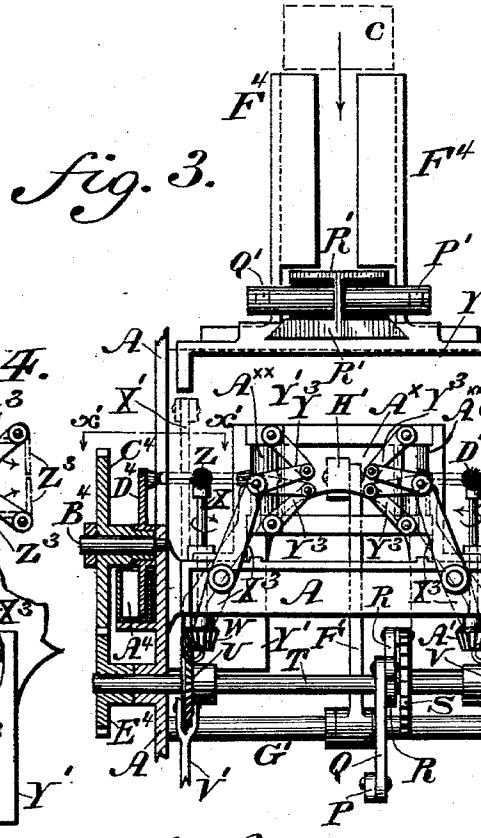

Fig. 4.

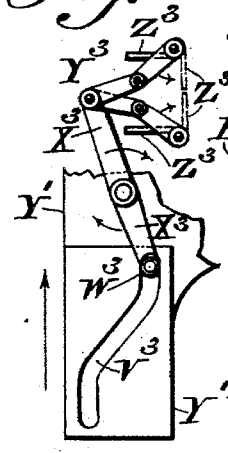

Fig. 5.

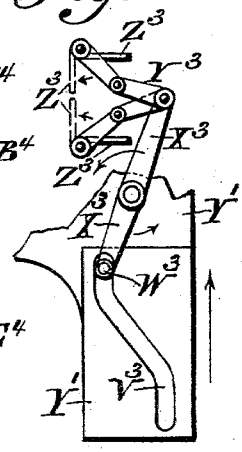

Fig. 6.

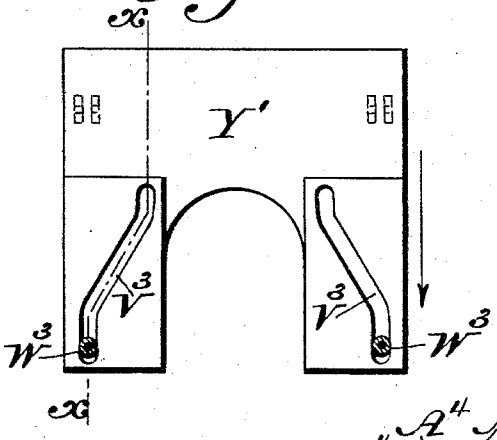

Fig. 7.

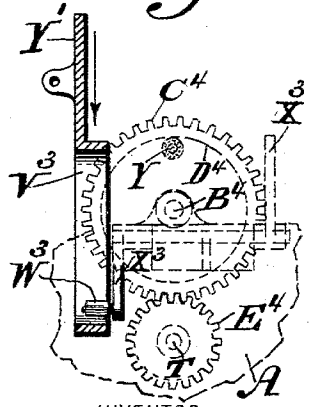

Fig. 8.

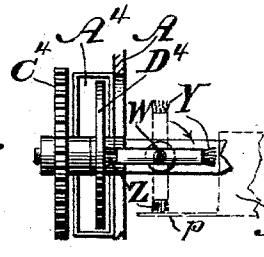

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Fig. 9.

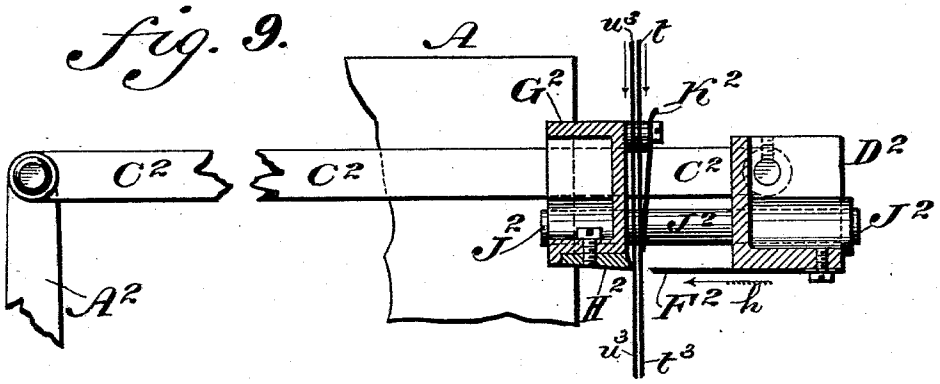
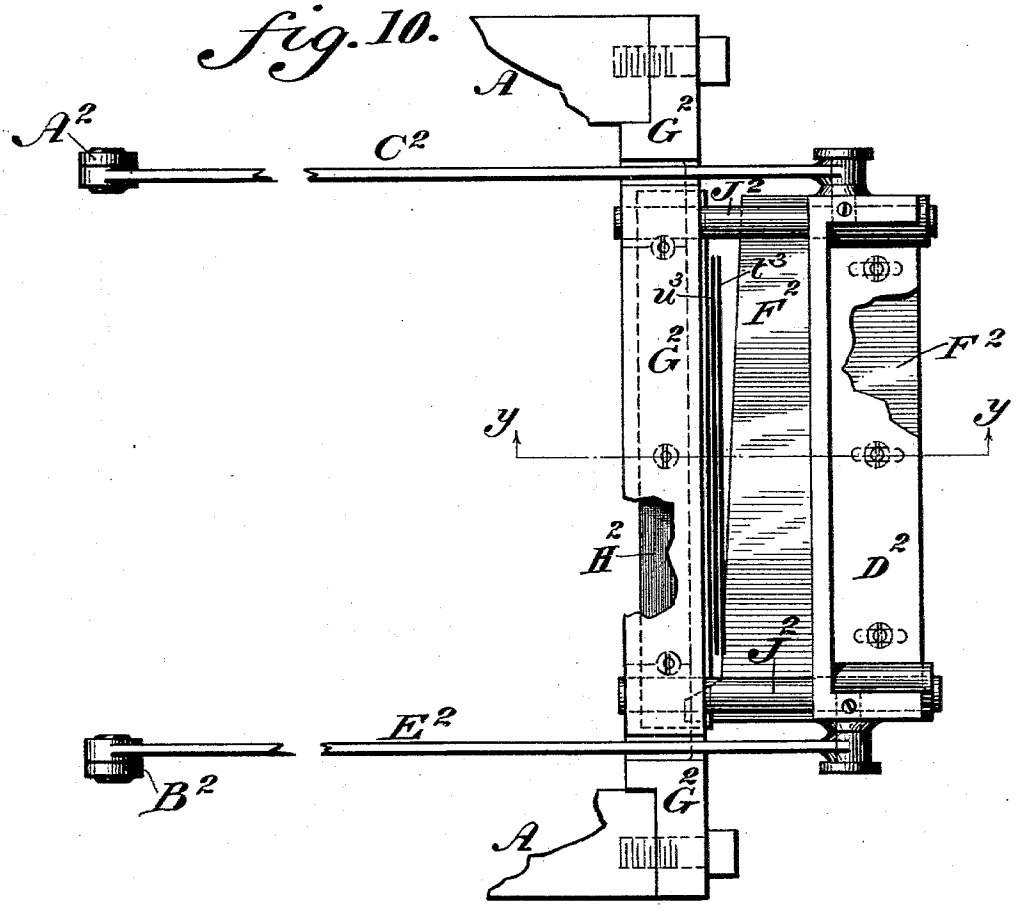


Fig. 10.



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MACHINE FOR WRAPPING SOAP, &c.

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Fig. 11.

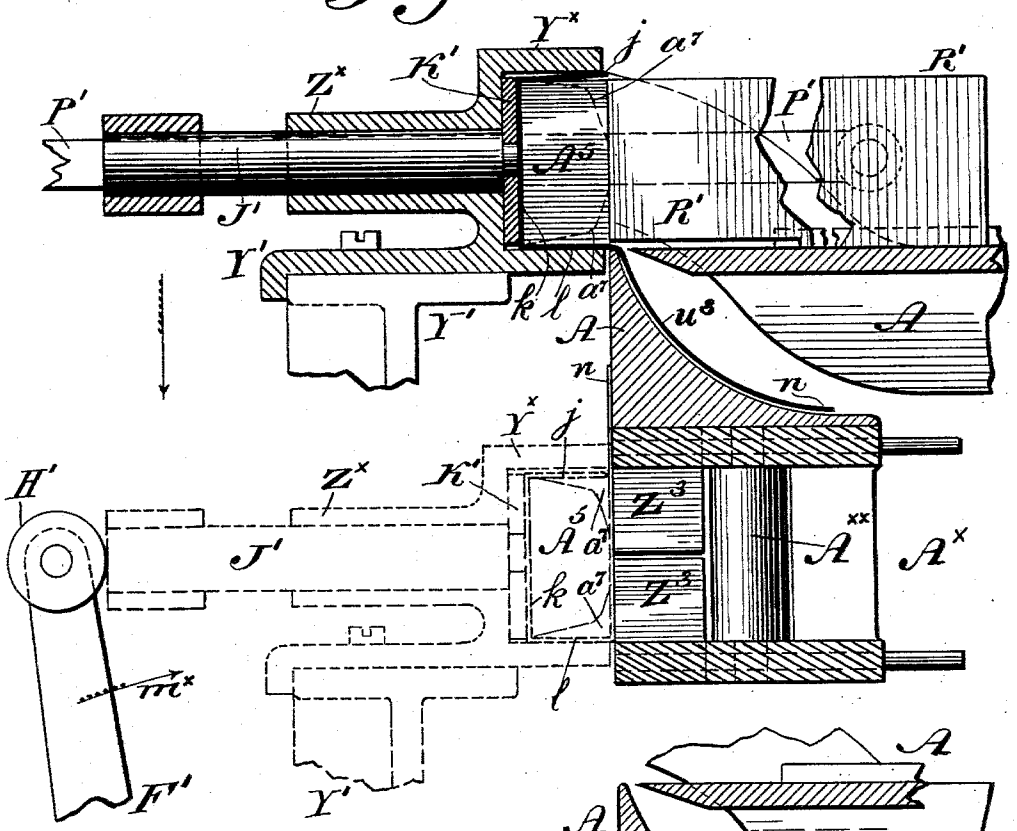
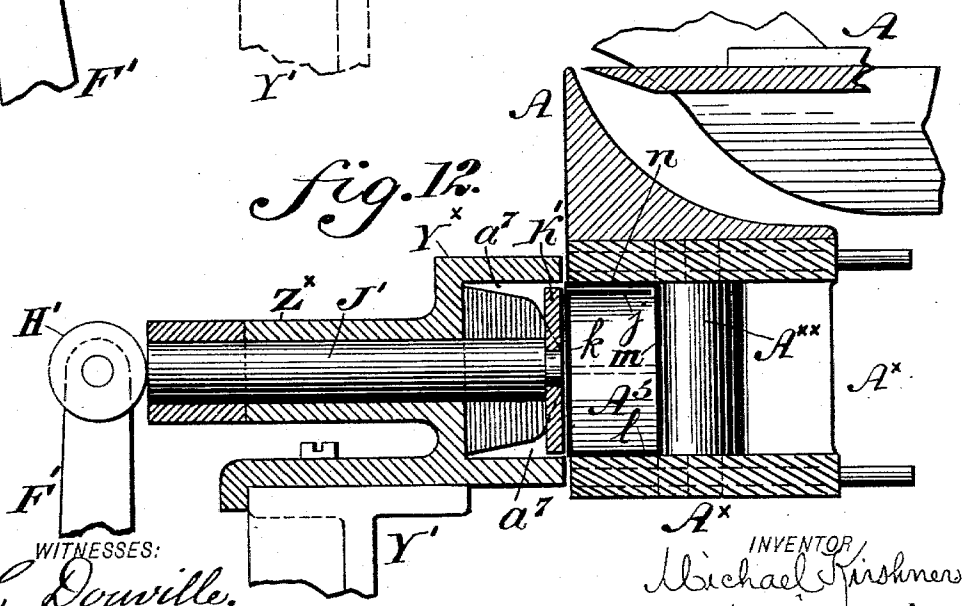


Fig. 12.



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(No Model.) 7 Sheets—Sheet 6.

M. KIRSHNER.

MACHINE FOR WRAPPING SOAP, &c.

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Fig. 13.

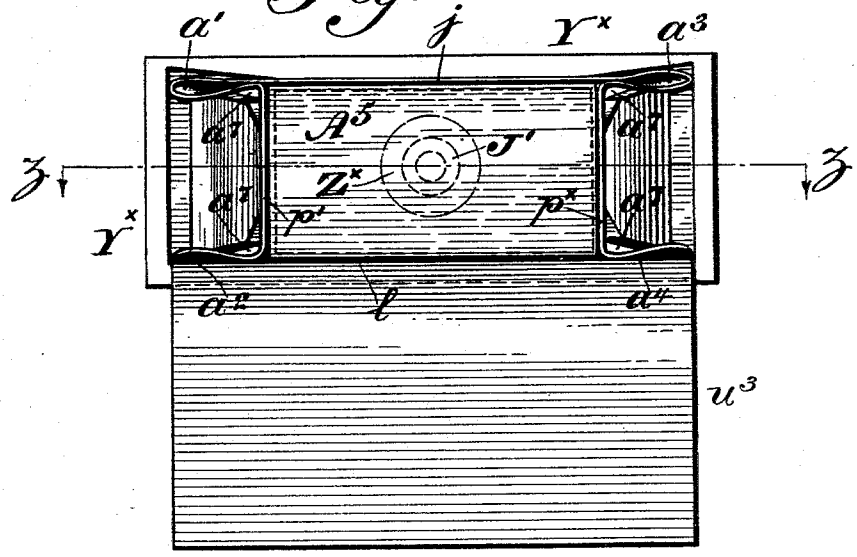
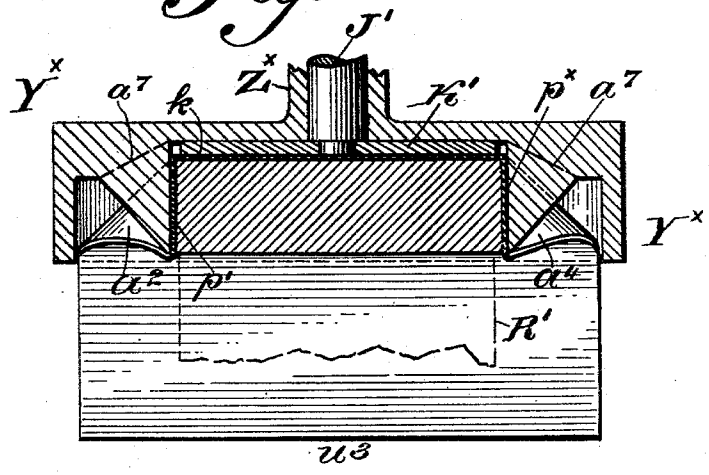


Fig. 14.



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M. KIRSHNER.

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Fig. 15.

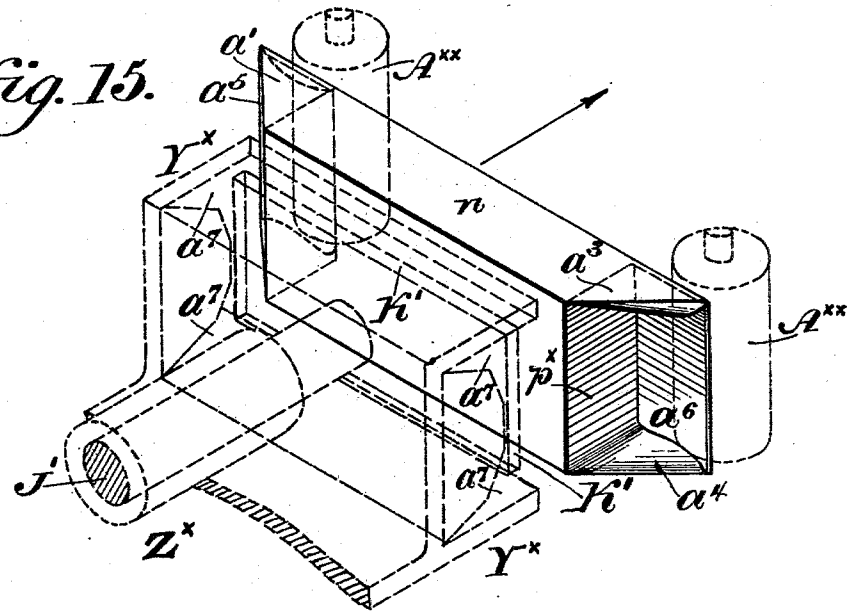


Fig. 16.

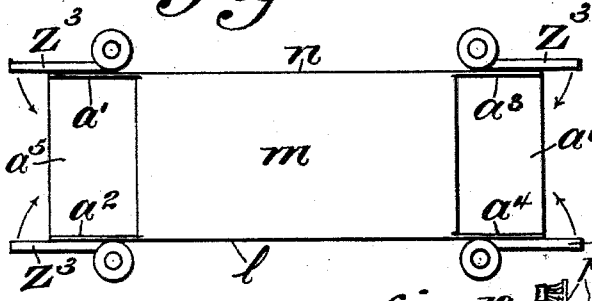


Fig. 17.

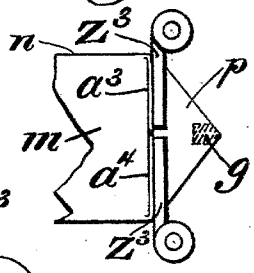


Fig. 18.

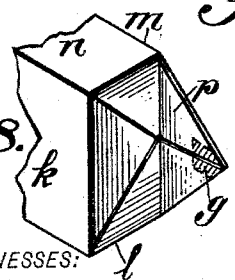


Fig. 19.

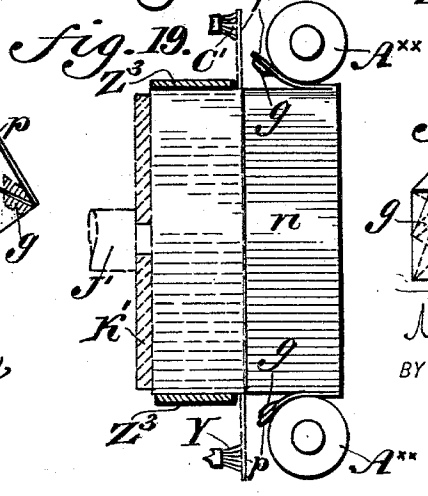
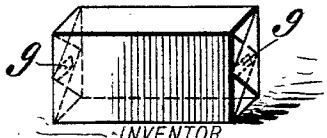


Fig. 20.



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UNITED STATES PATENT OFFICE.

MICHAEL KIRSHNER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR WRAPPING SOAP, &c.

SPECIFICATION forming part of Letters Patent No. 565,082, dated August 4, 1896.

Application filed April 26, 1893. Serial No. 471,905. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL KIRSHNER, a subject of the Czar of Russia, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Wrapping Soap and other Articles, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in machines for wrapping cakes of soap, boxes, &c.; and it consists of a machine having novel parts, as hereinafter described.

It further consists of the combination and arrangement of parts hereinafter set forth.

Figure 1 represents a partial side elevation and partial vertical section of a wrapping-machine embodying my invention. Fig. 2 represents a partial plan view and partial horizontal section of a portion of the machine. Fig. 3 represents a partial end elevation and partial vertical section of a detached portion. Figs. 4 and 5 represent views of detached portions and illustrate certain parts in different positions from those shown in Fig. 3. Fig. 6 represents a front elevation of a detached portion. Fig. 7 represents a vertical section on line $x\ x$, Fig. 6. Fig. 8 represents a partial plan view and partial horizontal section on line $x'\ x'$, Fig. 3, of a detached portion. The remaining figures of the machine are on an enlarged scale. Fig. 9 represents a partial side elevation and partial vertical section on line $y\ y$, Fig. 10, of the mechanism for cutting the paper wrappers. Fig. 10 represents a plan view of the parts shown in Fig. 9. Fig. 11 represents a partial side elevation and partial vertical section of the folding mechanism. Fig. 12 represents a partial side elevation and partial vertical section of the folding mechanism with certain parts in different positions from those shown in Fig. 11. Fig. 13 represents a front elevation of a detached portion. Fig. 14 represents a horizontal section on line $z\ z$, Fig. 13. Fig. 15 represents a perspective view of a partially-wrapped article, (as, for instance, a cake of soap,) a portion of the machine being shown in dotted lines. Fig. 16 represents a front elevation of a detached portion of the machine. Fig. 17 represents a front elevation of a detached portion of the machine with certain parts in different positions from those shown in Fig. 16. Fig. 18 represents a perspective view of one end of an article in partially-wrapped condition. Fig. 19 represents a partial plan view and partial horizontal section of a portion of the machine with an article to be wrapped therein. Fig. 20 represents a perspective view, on a reduced scale, illustrating an article as wrapped by the machine embodying my invention.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the frame of the machine, on which is mounted the driving-shaft B, which carries the driving-pulley C, the loose pulley D, and the sprocket-wheel E, around which latter passes the sprocket-chain F, which operates the printing-roller G, said shaft also carrying the cams H, J, K, L, M, and N. The cam H operates the lever P, which by means of a link Q imparts motion to the pawl-carrying elbow-lever R, and consequently to the ratchet-wheel S, secured to the shaft T, which latter has also secured thereon the bevel gear-wheels U and V, the former of these meshing with a gear-wheel W, secured to a vertical shaft X, mounted on the frame A, and having connected with its upper end the brushes Y and Z. The gear-wheel V meshes with a gear-wheel A′, mounted on a vertical shaft B′, having secured on its upper end the brushes C′ and D′, (see Figs. 3 and 19,) said brushes Y, Z, C′, and D′ applying adhesive material to a suitable portion of the wrappers, as will be hereinafter described.

The lever P hereinbefore referred to is loosely mounted on a shaft E′ on the frame A.

The cam J operates an elbow-lever F′, loosely mounted on a shaft G′ on the frame A. The upper end of the vertical limb of said lever F′ carries a roller H′, adapted to work against the stem J′ of a sliding plate K′, (see Figs. 11 and 12,) as will be hereinafter more fully described.

The cam K operates a lever L′, secured to the shaft E′ and imparts to the latter a rocking motion, which is transmitted to the levers M′ and N′, secured to the shaft E′, and said levers, by means of links P′ and Q′, impart a

reciprocating motion to a cross-head R', the object of which will be hereinafter fully described.

The cam L operates a lever S', secured to a shaft T' on the frame A and imparts a rocking motion to said shaft, which in turn transmits this motion to the levers U' and V', secured to the shaft T'. The lever U' is connected by means of a link W' with a rising-and-falling frame Y', suitably guided in the frame A, and the lever V' is connected by means of a link X' with said frame Y', so that the action of the cam L on the lever S' and connected parts will cause the frame Y' to move up and down.

The cam M operates a lever Z', secured to the shaft G' and imparts a rocking motion to said shaft, which in turn transmits the same to the levers A^2 and B^2, secured to the shaft G'. The levers A^2 and B^2 are connected by means of links C^2 and E^2, respectively, with a cross-head D^2, so that the action of the cam M and connected parts will impart a reciprocating motion to said cross-head. This latter has secured to its under side an adjustable knife or blade F^2, which is adapted to cut the paper from which the wrappers are made, as will be hereinafter fully described.

Secured to the frame A is a cross-piece G^2, on the under side of which is secured a cutter-head H^2, which works in conjunction with the blade F^2, as most clearly shown in Figs. 9 and 10. The cross-piece G^2 is further provided with guide-rods J^2, on which slides the cross-head D^2, and a plate K^2, which holds the paper to be cut, and from which wrappers are made, in a proper position relatively to the blade F^2 and cutter-head H^2.

The cam N operates a lever L^2, loosely mounted on the shaft E'. To the free end of this lever is connected a link M^2, which imparts motion to the mechanism connected with the inking-rollers for the printing-roller G.

Pivoted to the upper portion of the frame A is a frame N^2, which is provided with the inking-rollers P^2, P^3, P^4, P^5, and P^6 and friction-roller Q^2, the roller G being also mounted on said frame N^2, the latter having its pivot or axis, as at R^2, so as to either raise or lower the printing-roller G, this adjustment being necessary when articles of different sizes are placed in the machine so as to be wrapped. It is evident that when articles of various sizes are to be wrapped all those of one size are completed before some of another size are placed in the machine, this being done to prevent continually adjusting the printing-roller G. When the roller G has been adjusted, the clamping-screw S^2, which is carried by the frame N^2 and travels in a segmental slot T^2 in the frame A, is tightened against said frame A, thereby retaining the frame N^2 and connected parts in adjusted position.

Pivoted to the frame N^2 is an elbow-lever U^2, the free end of one of its limbs carrying the inking-roller P^3, and the free end of its other limb having connected with it the pawl $V^\times$, that operates the ratchet-wheel V^2, which rotates the inking-roller P^2, it being noticed that the elbow-lever U^2 is connected with the link M^2, hereinbefore described.

The printing-roller G is secured to a shaft Q^3, loosely fitted in the frame N^2, said shaft having also secured to it a sprocket-wheel R^3, around which passes the sprocket-chain F, the object of which is to operate said roller G, as has been hereinbefore described.

The frame N^2 has secured to it a hopper S^3, adapted to receive the ink to be supplied to the printing-roller G.

When cakes of soap are to be wrapped, two kinds of paper are generally used, the one coming in contact with the soap being suitably waxed or coated to prevent the same from adhering to the soap, and the other is ordinary wrapping-paper from which are made the outside wrappers.

The upper portion of the frame A is formed with branches *a* and *b*, the former of these sustaining a roll T^3 of coated paper and the latter a roll U^3 of ordinary paper.

To the upper portion of the rising-and-falling frame Y' is secured a pocket $Y^\times$, adapted to receive the article to be wrapped, and secured to the frame A is a pocket $A^\times$ for a similar purpose, said pocket $A^\times$ being provided with rollers $A^{\times\times}$ for closing the gummed ends of a wrapper. The pocket $Y^\times$ is formed with a sleeve $Z^\times$, in which is guided the stem J' of the sliding plate K'.

The rising-and-falling frame Y' is formed with slots V^3, in which are fitted rollers W^3 of the levers X^3, these latter imparting motion to the toggle-levers Y^3, which operate the folders Z^3. (See Figs. 3, 4, 5, 6, and 7.)

Secured to the frame A adjacent to the pocket $A^\times$ are the hoppers A^4, adapted to receive adhesive material to be applied to the wrappers. (See Figs. 3 and 8.)

Secured to the frame A just above each hopper A^4 is a stud B^4, on which is loosely mounted a gear-wheel C^4, to which is secured a head or disk D^4, the lower portion of which enters the hopper A^4 and is consequently supplied with adhesive material.

Secured to each end of the shaft T is a gear-wheel E^4, the same meshing with the gear-wheels C^4, whereby motion imparted is transmitted to the gear-wheels C^4, and consequently to the heads or disks D^4, so as to cause the latter to supply the brushes Y, Z, C', and D' with adhesive material.

The operation is as follows, assuming that the articles to be wrapped are cakes of soap: The free ends of the paper from the rolls T^3 and U^3 are inserted by hand between the printing-roller G and friction-roller Q^3, and are then brought between the cutter-head H^2 and plate K^2, and when the distance from the free ends of the paper to the knife-blade F^2 is equal to the length required to form a wrapper the same is let go and the ends permitted to hang loosely, as shown in Fig. 1. Cakes *c*

of soap are then placed in the hopper F^4, the bottom cake resting on a portion of the frame A in the path of the cross-head R', the subsequent cakes resting one on the other, as shown in Fig. 1, and the machine is now in readiness to be started. When this latter is accomplished, the sprocket-wheel E by means of the chain F imparts motion to the sprocket-wheel R^3 and consequently to the printing-roller G thereon. When the raised portion *d* of the printing-roller G is working in connection with the feed-roller Q^2, the paper from the roll U^3 will receive an impression from said raised portion while passing between the same and the feed-roller Q^2, and the paper from both rolls T^3 and U^3 will be drawn therefrom until the depressed portion *e* of the printing-roller G is presented to the roller Q^2, when the feeding of the paper from the rolls T^3 and U^3 ceases, owing to the blank space *f* existing between the roller Q^2 and the depressed portion *e* of the printing-roller, as shown in dotted lines at the right of Fig. 1. When the feeding of the paper from the rolls T^3 and U^3 ceases, the operation of wrapping is being accomplished, as will be hereinafter described.

The printing-roller G is supplied with ink from the hopper S^3 in the following manner: The cam N imparts motion to the lever L^2, which causes the link M^2 to operate the elbow-lever U^2 and consequently the pawl-and-ratchet mechanism connected therewith, and thereby rotate the inking-roller P^2, which receives ink from the hopper S^3 and transfers the same to the roller P^3, which latter, owing to the elbow-lever U^2, is carried from the roller P^2 to the roller P^4 and supplies the same with ink, and this in turn, through the rollers P^5 and P^6, supplies the printing-roller G.

The wrapping of the articles is accomplished in the following manner: The cam K operates the lever L', which imparts a rocking motion to the shaft E', and consequently a similar motion to the levers M' and N', secured to said shaft. The levers M' and N' impart a reciprocating motion to the links P' and Q', and consequently a similar motion to the cross-head R', to which said links are connected. When the cross-head R' moves in the direction indicated by the arrow $g^{\times}$, Fig. 1, it will cause the cake of soap in its path to move with it, the other cakes in the hopper F^4 resting on the top of said cross-head until the pieces of paper from the rolls U^3 and T^3 which pass between said cross-head R' and the sliding plate K' are firmly held by reason of the cross-head R' and sliding plate K' coming together. The object in firmly holding the paper is to prevent the same from slipping while being cut. The cam M now operates the lever Z', secured to the shaft G, and impart to it a rocking motion, which is transmitted to the levers A^2 and B^2, secured thereon, and these, by means of the links C^2 and E^2, impart a reciprocating motion to the cross-head D^2, and consequently to the blade F^2, secured thereto. When the cross-head D^2 travels in the direction indicated by the arrow *h* in Figs. 1 and 9, it will cause the blade F^2 to cut the pieces of paper w^3 and t^3 fed from the rolls U^3 and T^3.

In order to more clearly illustrate the wrapping operation, a single sheet of paper is shown in Figs. 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20, it being evident that when more than one sheet is employed the additional sheets undergo the same operation described for a single one. As the cross-head R' continues to advance it causes the cake of soap A^5 in its path and the paper held between it and the sliding plate K', as well as the plate K' itself, to enter the pocket $Y^{\times}$, as shown in Fig. 11, it being noticed that the plate K' and its stem J' travel together. When the cake of soap is in the pocket $Y^{\times}$, three of its sides are covered by the paper from which a wrapper is formed, as shown at *j k l*, Fig. 11, and the free end of the paper w^3 hangs loosely, as at *n*. The cake of soap, when in the pocket $Y^{\times}$, has its ends *p' p'* also covered by the wrapping-paper, as shown in Figs. 13 and 15. These several folds are formed by the paper coming in contact with the walls of the pocket $Y^{\times}$. When the wrapping operation has been thus far accomplished, the folds a', a^2, a^3, and a^4 occur as a natural consequence, as shown in Figs. 13 and 14. It will be noticed that portions of the pocket $Y^{\times}$ are cut away, as at a^7, (see Figs. 12, 13, 14, and 15,) said cut-away portions being to permit the folds a' a^2 a^3 a^4 to project beyond the ends of a cake of soap, and thereby prevent said folds from being crushed when the soap enters the pocket $Y^{\times}$. The cam K and connected parts now return the cross-head R' to its starting-point. The cam L then operates the lever S', secured to the shaft T', and imparts a rocking motion to the same, which is transmitted to the levers U' and V', and by means of the links W' and X' causes the rising-and-falling frame Y, and consequently the pocket $Y^{\times}$ thereon, to lower so as to bring said pocket $Y^{\times}$ on a line with the pocket $A^{\times}$, as shown in dotted lines in Fig. 11, it being noticed that when the frame Y' is lowered the stem J' comes in the path of the roller H'. The cam J now operates the elbow-lever F' and causes the roller H' thereon to travel in the direction of the arrow $m^{\times}$, Fig. 11. This causes the stem J', which was previously moved toward the roller H' by reason of the cake of soap A^5 entering the pocket $Y^{\times}$, and consequently the plate K', to return to their normal positions or starting-points, as shown in Fig. 12. It will now be noticed that the plate K' has removed the cake of soap A^5 from the pocket $Y^{\times}$ and caused the same to enter the pocket $A^{\times}$. The slots V^3, hereinbefore described, act as cams for the levers X^3, so that when the rising-and-falling frame Y', in which said slots are formed, is in its raised position the rollers W^3 on said levers X^3 will occupy a position at the bottom of said slots V^3, as more clearly shown in Fig. 6, and when in this position the levers X^3 will have their upper ends

brought toward each other or inwardly, as shown in Fig. 3, and thus cause the pivoted folders Z^3, by means of the toggle-levers Y^3, to close, as shown in dotted lines in Figs. 4 and 5 and in full lines in Figs. 16, 17, and 19. When the rising-and-falling frame Y′ is in its lowered position, as shown in Figs. 4 and 5, the rollers W^3, hereinbefore described, will occupy a position at the top of the slots V^3, as shown in Figs. 4 and 5, and thus cause the upper ends of the levers X^3 to move away from each other or outwardly, as shown in said figures, and owing to the toggle-levers Y^3 connected therewith will open the folders Z^3, as shown in Figs. 4, 5, and 16.

When a cake of soap occupies a position in the pocket $A^\times$, the free end *n* of the paper, as hereinbefore described, will, owing to the upper wall of said pocket $A^\times$, be caused to lie or fold over the fold *j*, and in doing so a portion *m* of the paper u^3, hereinbefore described, will cover that part of a cake of soap opposite to the fold *k*, as clearly shown in Fig. 12, and a cake of soap as thus far wrapped is illustrated in Fig. 15. As hereinbefore described, the frame Y′ is now in its lowered position, and consequently the folders Z^3 are opened. (See Fig. 16.) The frame Y′ now rises, and in doing so closes said folders Z^3, as shown in Fig. 17, thereby folding the projecting portions a', a^2, a^3, and a^4 against the ends of the cake of soap, there then remaining triangular folds *p*, as shown in Figs. 17, 18, and 19. The cam H and connected parts, as hereinbefore described, now cause the brushes Y, Z, C′, and D′ to revolve with their respective shafts X and B′, and thereby apply the adhesive material *g* to the triangular folds *p*, as shown in Figs. 8 and 19. The pocket $Y^\times$, after receiving another cake of soap from the hopper F^4, again lowers, and said cake, after undergoing the operation of wrapping hereinbefore described, reaches and bears against the cake A^5, and owing to the sliding plate K′ causes the cake of soap A^5, as thus far wrapped, to pass between the rollers $A^{\times\times}$, which press the folds *p* against those already formed on the ends of the cake of soap A^5, and owing to the adhesive material thereon cause said folds *p* to remain in folded condition and completes the wrapping operation. As hereinbefore described, the frame Y′ when lowered opens the pivoted folders Z^3, so that the latter in no way interfere with the folds of a cake of soap when the same is passing from the pocket $Y^\times$ to the pocket $A^\times$, and the cake of soap, after passing between the rollers $A^{\times\times}$, reaches the chute $B^\times$ and is directed by the same from the machine to a suitable receptacle, box, &c.

When it is desired to wrap cakes of soap of small size, the free end of the frame N^2 is lowered, so as to cause the printing-roller G to occupy a proper position relatively to the required size of the paper to be cut from the roll U^3, and from which a wrapper is formed, so that the impression from said roller will be in a proper part of the paper. It is evident that when the free end of the frame N^2 is lowered the sprocket-chain F will hang loosely on the sprocket-wheels E and R^3. In order then to take up the slack in said chain, a screw N^4 in the frame A is loosened, thereby permitting the swinging frame N^5, which has a segmental slot through which said screw N^4 passes, to be swung on its pivot N^6, so as to cause a roller N^7 on said frame to bear against the chain F, and thus tighten the same. This being done, the screw N^4 is properly rotated, so as to firmly hold the roller N^7 in its adjusted position against the chain. The pockets $A^\times$ $Y^\times$ may be removed from the frame A, and pockets differing in size, but similar in construction, employed in their places, this change becoming necessary when articles of different sizes are to be wrapped.

When different-sized articles are to be wrapped, the feed is adjusted by placing in the machine a printing-roller G, whose raised portion *d* will, when working in connection with the friction-roller Q^2, feed the paper from the rolls T^3 and U^3 a length corresponding to the size of the article to be wrapped. For instance, when a small article is to be wrapped the printing-roller G will have but a short peripheral raised portion *d*. When a larger-sized article is to be wrapped, the roller G employed in wrapping the small article is removed from the machine, and one with a longer peripheral raised portion *d* is put in its place. In the drawings the raised portion *d* is shown the length of a semicircumference and rollers each having a different length of raised portion *d* may be used. All rollers G are of the same diameter.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a soap-wrapping machine, a frame, a rotating shaft mounted in said frame and having a cam thereon, a hopper on said frame, a lever actuated by contact with said cam, a rocking shaft actuated by said lever, a cross-head connected by links to levers connected with said rocking shaft, a pocket with a sleeve at one end, a sliding plate movable in said pocket and having a stem guided in said sleeve, and mechanism for operating said plate, said parts being combined substantially as described.

2. In a soap-wrapping machine, a frame, the rotatable shaft B mounted therein, and having the cam K, the levers L′, M′, N′, and the shaft E′, the cross-head R′ connected by the links P′, Q′, with said levers M′, N′, the rising-and-falling pocket $Y^\times$, having the sleeve $Z^\times$ and the sliding plate K′, in said pocket and having the stem J′ guided in said sleeve, said parts being combined substantially as described.

3. In a soap-wrapping machine, the frame A having the branches *a* and *b* thereon, provided with journal-bearings, the rotary shaft B in said frame, the printing-frame N^2 ad-

justably connected with and above said frame A, the printing-roller G and the pressure-roller Q^2 below the journal-bearings on said branches *a* and *b*, the cross-piece G^2 on the frame with the cutter H^2 thereon, the cross-head D^2 with cutter F^2 thereon, said cross-piece G^2 having the guide-rods J^2 thereon for said cross-head, said parts being combined substantially as described.

4. In a soap-wrapping machine, a frame with the shaft B mounted therein, and having the branches *a* and *b* thereon, a printing-frame with printing and pressure rollers, a cutting device below said printing and pressure rollers, a hopper on said frame, the cross-head R′ on said hopper, the pocket $Y^\times$ having the sleeve $Z^\times$ and the sliding plate K′ having the stem J′ guided in said sleeve, said parts being combined substantially as described.

5. In a soap-wrapping machine, the frame A having a segmental slot therein, the frame N^2 pivotally connected to said frame A, and having the printing-roller G and pressure-roller Q^2 mounted therein, and the clamping-screw S^2, said parts being combined substantially as described.

6. The swinging frame N^2 with inking-rollers the printing-rollers G and the impression-rollers Q^2 thereon, the clamping-screw S^2 and frame A with the segmental slot T^2, said parts being combined substantially as described.

7. In a soap-wrapping machine, a frame with the rotary shaft B mounted therein, the pivoted lever P operated by a cam on said shaft, the pawl-carrying elbow-lever R connected by the links Q with said lever P, the shaft T having the ratchet-wheel S and the bevel-wheels U and V therein, the vertical shafts X, and B′, with the wheels W, A′, meshing with said bevel-gears U, V, respectively, and brushes on said vertical shafts, said parts being combined substantially as described.

8. The rising-and-falling frame Y with the pocket $Y^\times$, the folders Z^3 with operating mechanism, and the frame A of the machine with the pocket $A^\times$, the closing-rollers $A^{\times\times}$, the sliding plate K′, and means for operating said plate, said parts being combined substantially as described.

9. The rising-and-falling frame Y′ with slots V^3 therein, the rollers W^3 in said slots, the levers X^3 and the toggle-levers Y^3 in combination with the folders Z^3 on said levers, said parts being combined substantially as described.

10. In a soap-wrapping machine, a frame, vertical shafts with brushes thereon, mechanism substantially as described for imparting rotary motion to said shafts, the hopper A^4, the studs B^4 secured to said frame and having the gear-wheels C^4 loosely mounted thereon, a disk D^4 secured to each of said wheels C^4 and entering a hopper A^4, said disks contacting with said brushes on said rotary vertical shafts, said parts being combined substantially as described.

11. The pocket $Y^\times$, the sliding plate K′, the stem J′ and operating mechanism therefor, said pocket being cut away as at a^7, said parts being combined substantially as described.

12. In a soap-wrapping machine, a frame, a rising-and-falling pocket having a sliding plate therein, a feeding cross-piece, a stationary pocket adapted to receive the contents of said rising-and-falling pocket, rolls in said stationary pocket, folders and a gumming device adjacent to said rolls, said parts being combined substantially as described.

13. The frame N^2, the printing-roller G thereon, the sprocket-wheel R^3 connected with said roller, the frame A with shaft B having the sprocket-wheel E thereon, means for adjusting said frame N^2 on said frame A, and the sprocket-chain F in combination with the swinging frame N^5, having segmental slot, the screw N^4 in said slot, and the roller N^7 on said frame, said parts being combined substantially as described.

14. In a wrapping-machine, the movable pocket $Y^\times$ with the sliding plate K′ therein, the folders Z^3 with operating mechanism therefor, the stationary pocket $A^\times$ mechanism for gumming the ends of wrappers on an article in said pocket $A^\times$ and the closing-rollers $A^{\times\times}$, said parts being combined substantially as described.

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