

No. 772,406.

PATENTED OCT. 18, 1904.

H. G. ECKSTEIN.

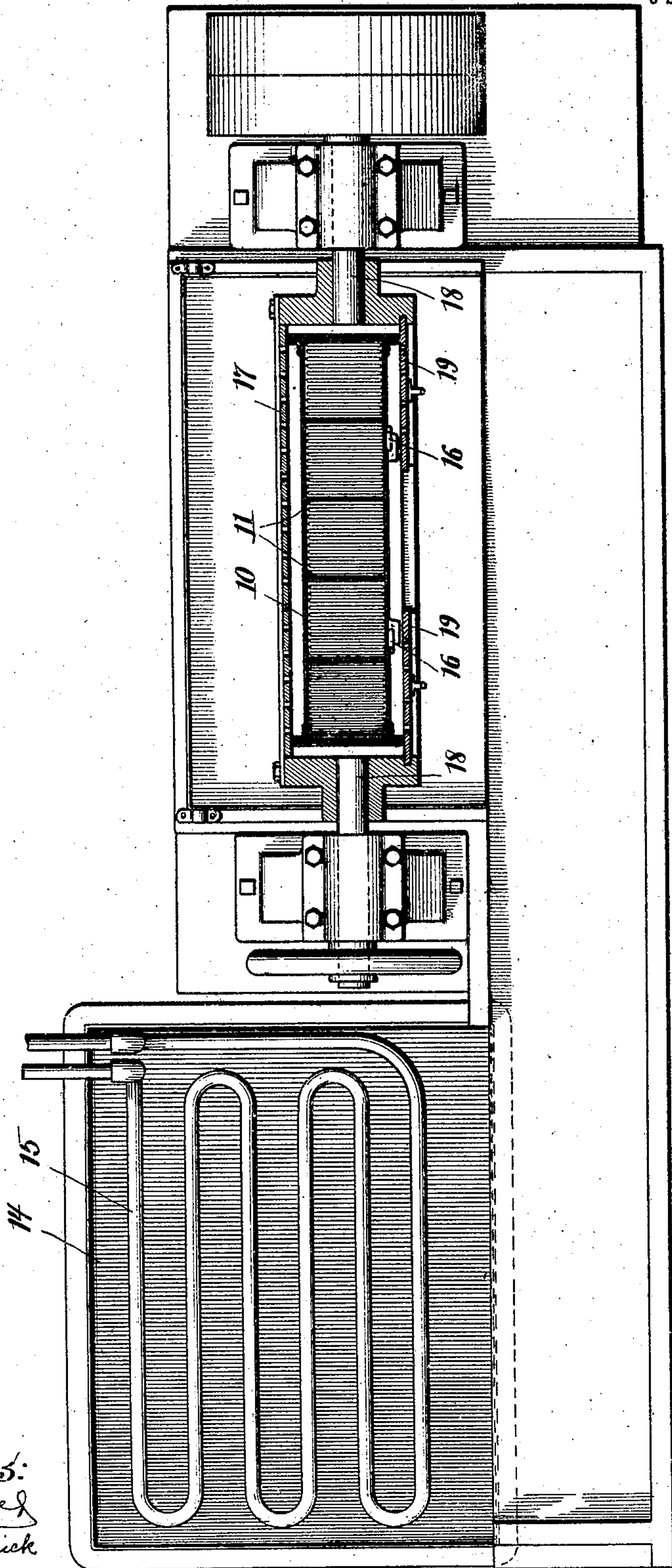
MANUFACTURE OF PACKET FLATS.

APPLICATION FILED JULY 18, 1902. RENEWED MAR. 18, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

*Fig. 1.*



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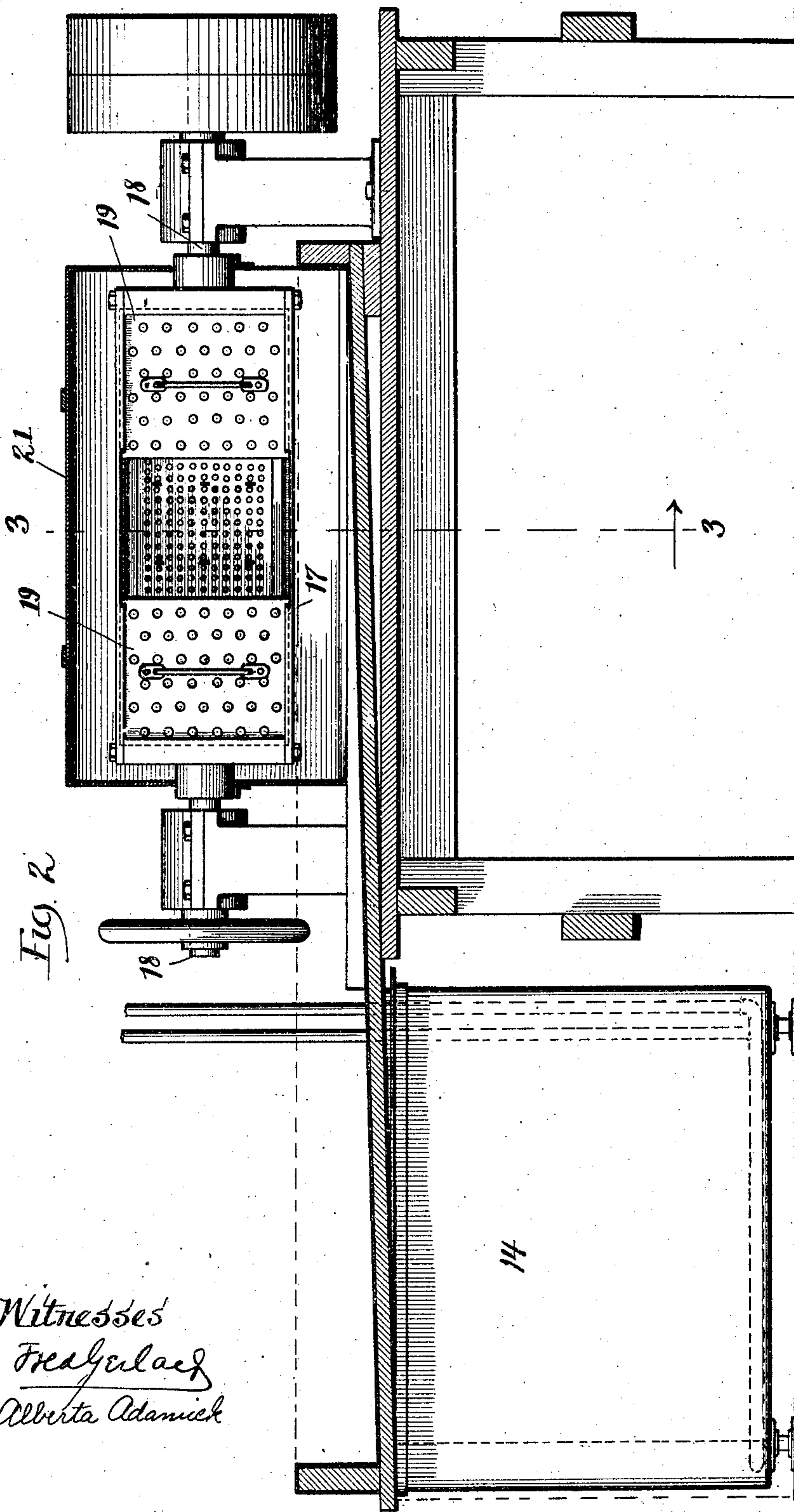
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NO MODEL.

3 SHEETS—SHEET 2.





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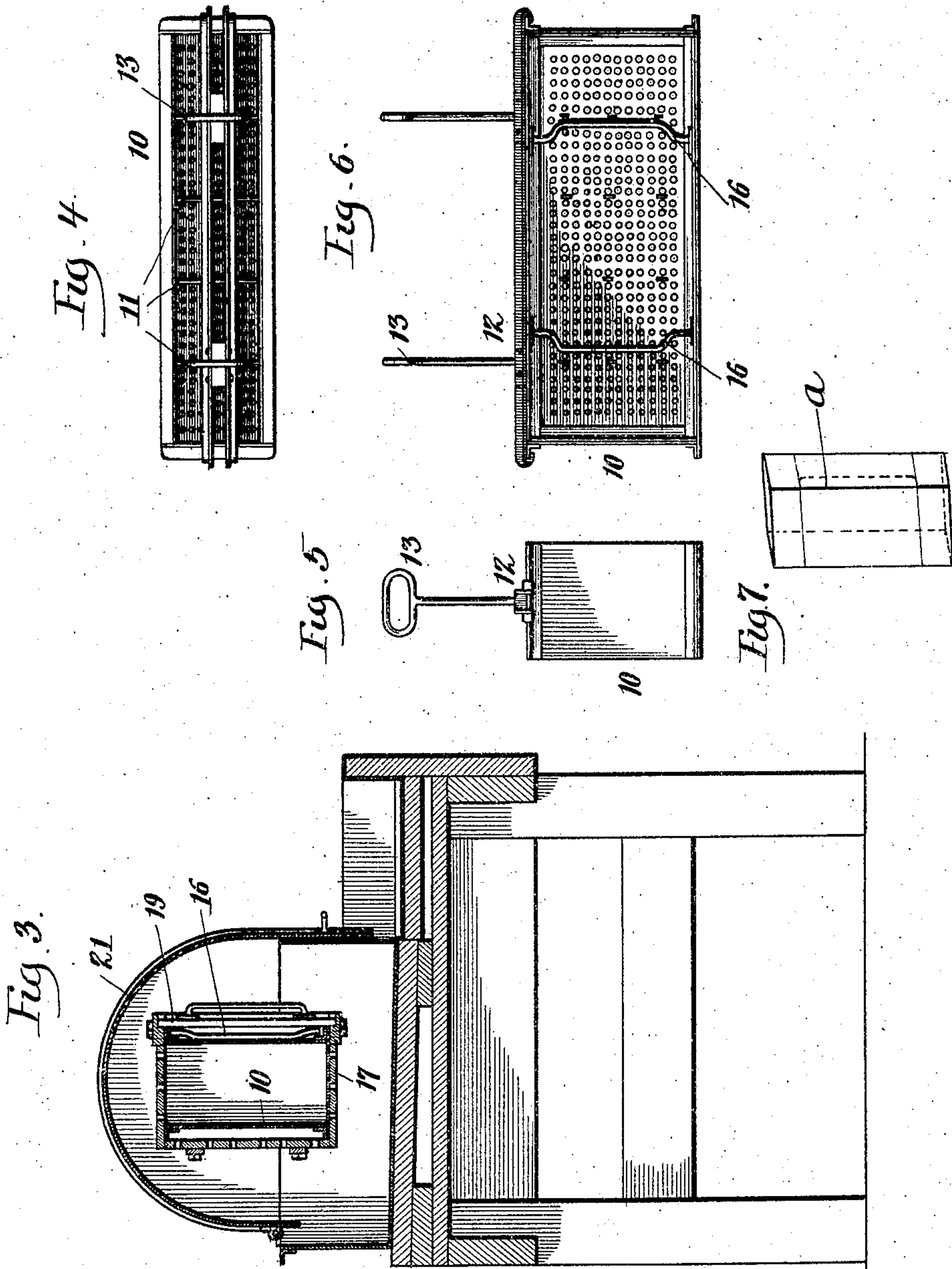
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MANUFACTURE OF PACKET FLATS.

APPLICATION FILED JULY 18, 1902. RENEWED MAR. 18, 1904.

NO MODEL.

3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

HENRY G. ECKSTEIN, OF CHICAGO, ILLINOIS.

## MANUFACTURE OF PACKET-FLATS.

SPECIFICATION forming part of Letters Patent No. 772,406, dated October 18, 1904.

Application filed July 18, 1902. Renewed March 18, 1904. Serial No. 198,837. (No specimens.)

*To all whom it may concern:*

Be it known that I, HENRY G. ECKSTEIN, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Methods of Waterproofing Packet-Flats, of which the following is a full, clear, and exact description.

The invention relates to tight paper packets formed in knockdown or "flat" state, and more particularly suited for use as an inside wrapper to inclose candies, biscuit, coffee, shelled peanuts, or other small merchandise liable to become stale on exposure to the air.

In the endeavor to waterproof stiff-paper packets it is familiar practice to apply a light film of melted paraffin-wax at one or both sides of the paper sheet, a thin size of water-glass solution being generally first applied to prevent excessive absorption of the wax later on. After the superficial coat has set the sheet is cut and scored into a series of blanks, each of which by proper folding constitutes a loose inclosing wrapper held to place and shape by suitable end tucks or tongues. These wrappers are loose—that is, they cannot be glued tight at the overlap-seam, because the wax coating already present there acts to hinder adhesion. Sometimes the paper sheet is left uncoated at the overlap-line. This expedient allows the folded blank to be glued along its lapped seam, thus producing a tight flat which can be distended at will to form a rectangular tubular packet for reception of the charge; but the packet is no longer waterproof, its overlap edges being purposely left uncoated to insure adhesion of the glue.

The present improvement aims to provide a packet-flat which is both tight and waterproof.

The exact nature of the advance will appear in detail from the following description and be more particularly pointed out by claims at its conclusion.

The drawings display one sort of apparatus conveniently used for practice of the invention.

Figure 1 is a plan, and Fig. 2 an elevation, of the dipping-tank, centrifugal drum, and perforated basket with parts displayed in sec-

tion. Fig. 3 is a cross-section view at line 3 3 of Fig. 2; Fig. 4, a plan, Fig. 5 an end, and Fig. 6 a side elevation of the perforated basket detached from the centrifugal. Fig. 7 is a view of distended flat in perspective, showing the glued overlap-seam.

At the outset the knockdown packets or flats are made up in familiar fashion by cutting the simple stiff-paper sheet into suitable blanks, which are properly scored and then folded over, as usual, the lapped edges being glued together, as at *a*, Fig. 7, to make a tight seam lengthwise of the flat, while the separate terminal flaps at each end beyond the seam are free to be folded down upon each other, as usual, when the flat is distended to inclose the charge. Some convenient number—*e. g.*, fifty to one hundred—of the tight-seam flats assembled together constitute a working bunch or pile, the practice being to treat in common at a single operation all of the flats present as units of the same bunch.

In loose state the packets from any given pile are set together end on within a suitable perforated receptacle preparatory to immersion in a bath of hot melted paraffin-wax. According to ordinary practice the receptacle preferably consists of a rectangular basket 10, comprising a skeleton frame of box-like form made up of angle-iron with sides and bottom of sheet metal numerous perforations to allow for ready ingress of the melted wax and for discharge of surplus wax later on. Cross-partitions 11 divide the basket into separate compartments, each of which may receive, *e. g.*, one hundred of the flats, the compartment being roomy enough to prevent the flats from packing too tightly together. Having filled the several compartments with separate piles of flats, the workman slips the inverted ends of movable handle-bar 12 crosswise beneath the angle-iron edges at top of the basket, Figs. 4 to 6, and by handles 13 lifts it, with its contents, into the bath of melted paraffin contained in vat 14. This vat is located conveniently at one side of the centrifugal and is seen to consist of a simple sheet-metal tank provided with a submerged pipe-coil 15, through which steam may circulate to keep the charge at proper temperature.



In customary practice refined paraffin-wax melting at, *e. g.*, 123° to 125° Fahrenheit is selected as the waterproof agent. Paraffins having higher or lower melting-points may be used instead, but the harder grades cost more, while the softer are less efficient. The bath is ordinarily maintained at, *e. g.*, 230° Fahrenheit, although it may fall below or rise above such point without material objection. If raised higher, the glued seam of the packets is apt to start or open. If the temperature range markedly lower, the number of packets confined at each basket may need to be lessened to better insure ready and even penetration of the liquid between contiguous flats. On complete submersion the paper flats rapidly absorb the melted wax and after some three to fifteen minutes exposure in the bath become practically saturated with the hot paraffin. The duration of treatment necessarily varies in keeping with differences of temperature, quality of paper, and number of flats retained at each compartment or receptacle. If the flats are set too tightly together, the liquid will not wet them thoroughly except after more time has elapsed than need be consumed. Owing to the end-on position of the flats within the bath, the hotter portions of liquid in rising toward the surface tend to penetrate not only between closely-adjacent flats, but also between inside faces of the same flat, forcing out the confined air, which is always free to travel toward the top and to escape past the open terminal flaps of the several flats in direction of least resistance.

When the flats have fairly absorbed a full charge of the waterproof material, the operator lifts the submerged basket from the vat and rests it on the vat-ledge, where the excess wax drains away under favoring influence of the high temperature there prevailing. At this stage the flats are very hot to the touch. By keeping them together in the bunch the residual heat is retained and markedly helps to "draw" the surplus wax into the more minute interstices while the wax works down by gravity between adjacent flats, becoming more and more absorbed until it quite disappears as a sensible coating unless perhaps at the bottom portions of the flats. Finally, in the act of removal from the basket the bunch is turned end for end and deposited within a snug wooden box, over which a bag may be thrown, whereupon any slight remnant of wax resumes its flow in reverse and by aid of the heat draws into the body of the paper to finish the packets in readiness for use. Were the flats allowed to cool in the bunch without reversal or were they taken out, separated, and spread apart, the surplus wax would not fully distribute, but must frequently remain at parts as a distinct surface coating. In setting as a surplus coating the wax often causes adhesion of contiguous flats or of the folds of

the same flat to the injury of the paper by tearing when the flats are separately handled at the packing-tables.

A more even and rapid elimination of the surface wax under influence of the residual heat is accomplished by treating the batch in the loaded basket centrifugally just after removal from the dipping-vat. For this purpose handle-bar 12 is slipped off the basket and side bails 16 used to lift it bodily into place within the rotating drum 17. The drum is here shown of rectangular form and is carried by opposite shafts 18, to which its ends attach. The drum affords proper support for the basket, the latter being held securely to place by slide-covers 19, retained in ways at the top of the drum. The covers bear snugly against the edge frame of the basket to keep it firmly set in position. By slipping each cover sidewise to the central portion of the drum the cover finally clears the retaining-edges and may be lifted free, thus allowing full space at the drum-mouth for entry or removal of the basket. Once the basket with its batch of hot dipped flats is mounted securely within the drum it is simply necessary to rotate the drum for a minute or so, or even less, at a low rate of speed—*e. g.*, two hundred to three hundred turns per minute. This causes the surplus wax retained between contiguous flats to be thrown off through the perforations of the cage and drum onto shield 21, from whence it flows back by gutter into dipping-vat 14. At the close of the treatment the basket is dismounted from the drum, and the bunch of finished flats taken out and deposited as a bunch within some wooden storage-box, where the flats are left to cool.

If the paper taken be folding-box board, manila stock—*e. g.*, one hundred and seventy-five to two hundred pounds to the standard ream—experience shows that the treatment of the flats in piles or bunches according to the process detailed enables some six or seven times the quantity of wax to be absorbed than were the old procedure followed, involving a mere superficial coating of the paper sheet preparatory to making up the loose flats—that is, to speak comparatively, the paper flats become saturated instead of being simply coated with waterproof wax, as in the old plan.

Obviously the details of method can be varied according to the mechanic's skill without essential departure from the invention. Thus the temperature, quality of wax, and duration of treatment are given for guidance only and are not to be deemed exclusive. Ordinary stiff papers of various stock suited to score and fold and to glue along the overlap-seam may be employed in the manufacture of tight flats and are amenable to treatment according to the method set forth.

The present invention pertains to the waxing of cartons assembled together in flat-



piles, and is therefore a specific type of the general process embodied in my companion application, Serial No. 166,960, filed July 25, 1903.

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

1. In the manufacture of packet-flats formed from paper blanks scored and folded as usual  
10 to leave opposite terminal flaps, the method of rendering the flats tight and waterproof which consists in gluing them along the overlap edge, assembling the flats together in pile, submerging the pile with the flats vertically  
15 disposed within a bath of melted paraffin until the flats are thoroughly saturated and while still confined in pile, after removal from the bath, effecting with the flats vertically  
20 disposed the elimination of the adherent surplus wax through aid of the residual heat confined by the close pile, substantially as described.

2. In the manufacture of packet-flats formed from paper blanks scored and folded as usual  
25 to leave opposite terminal flaps, the method of rendering the flats tight and waterproof which consists in gluing them along the overlap edge, assembling the flats together in pile, submerging the pile with the flats vertically  
30 cally disposed within a bath of melted paraffin until the flats are thoroughly saturated and while still confined in pile, after removal from the bath, effecting with the flats vertically disposed the centrifugal elimination of

the adherent surplus wax through aid of the 35 residual heat confined by the close pile, substantially as described.

3. In the manufacture of packet-flats formed from stiff-paper blanks, scored and folded to leave opposite terminal flaps, the method of  
40 rendering the flats tight and waterproof, which consists in sealing them along the overlapped side edges, assembling the flats together side by side in a pile, submerging the pile within a bath of melted wax until the  
45 flats are thoroughly saturated, and, while still confined in a pile, after removal from the bath, disposing the flats so as to effect edgewise the distribution and elimination of the  
50 adherent surplus wax through aid of the residual heat confined by the pile.

4. In the manufacture of packet-flats formed from stiff-paper blanks, cut and scored to leave opposite terminal flaps, the method of  
55 rendering the flats waterproof which consists in assembling the flats together side by side in a pile, submerging the pile within a bath of melted wax until the flats are thoroughly saturated, and, while still confined in  
60 a pile, after removal from the bath, disposing the flats so as to drain them edgewise and distribute and eliminate the surplus wax therefrom through aid of the residual heat confined by the close pile.

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