Oct. 15, 1929. J. G. HUYE 1,731,307

ADJUSTABLE ROTARY STENCILING PASTING MACHINE

Filed June 24, 1926 4 Sheets-Sheet 1

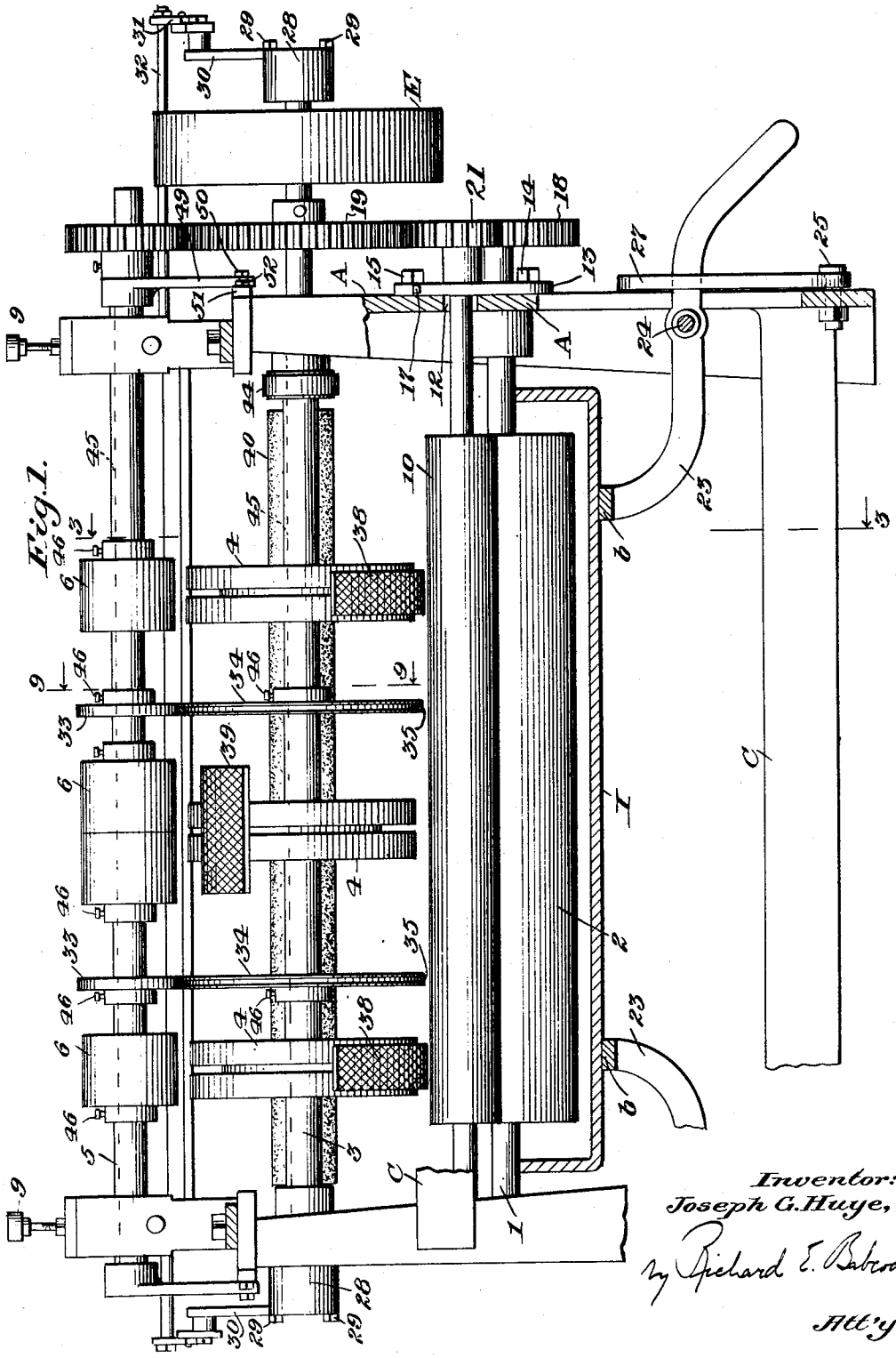


Fig. 1.

Inventor:
Joseph G. Huye,
by Richard E. Babcock
Atty.

Oct. 15, 1929. J. G. HUYE 1,731,307

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Filed June 24, 1926 4 Sheets-Sheet 2

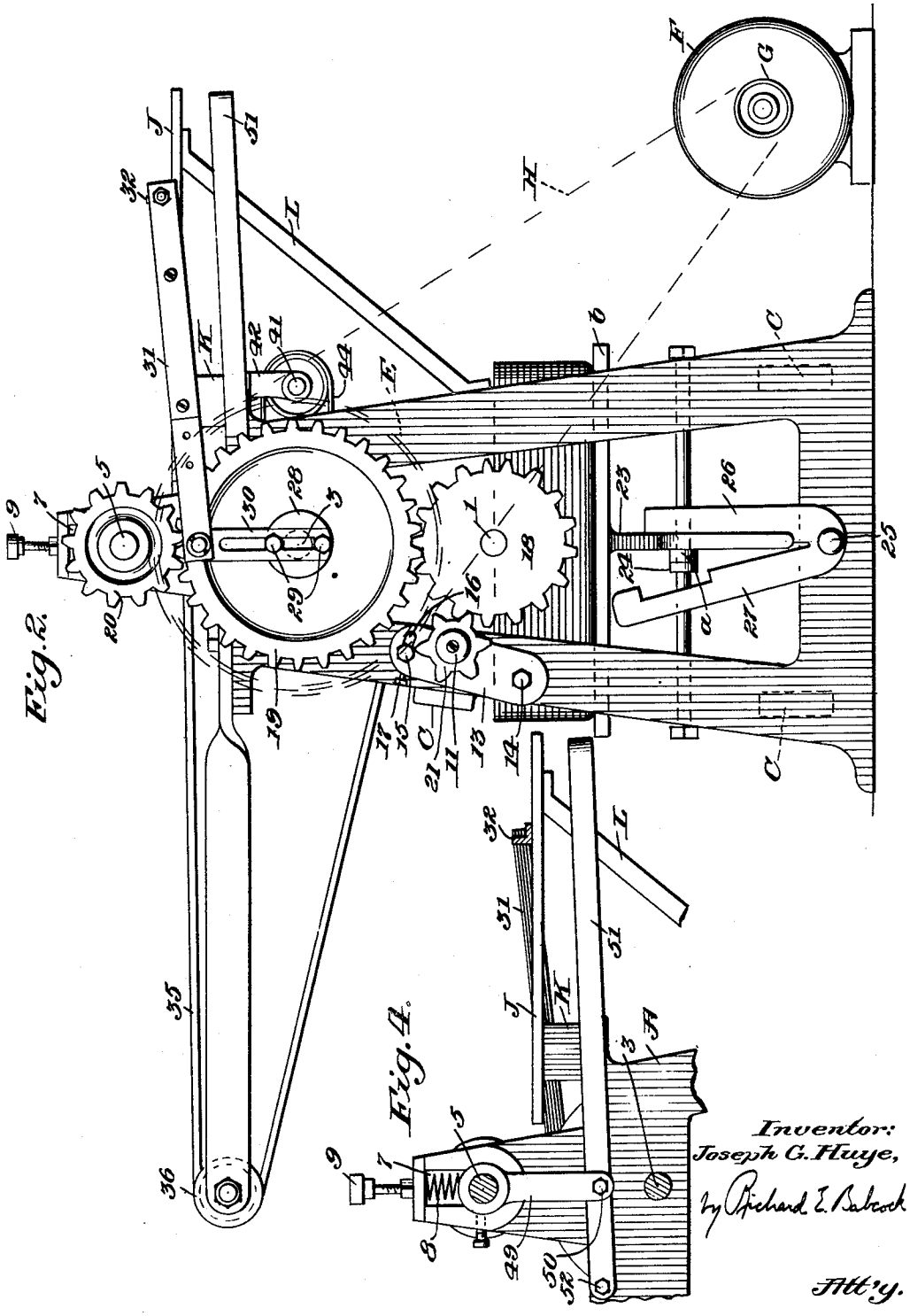


Fig. 2.

Fig. 4.

Inventor:
Joseph G. Huye,
by Richard E. Babcock
Att'y.

Oct. 15, 1929. J. G. HUYE 1,731,307

ADJUSTABLE ROTARY STENCILING PASTING MACHINE

Filed June 24, 1926 4 Sheets-Sheet 3

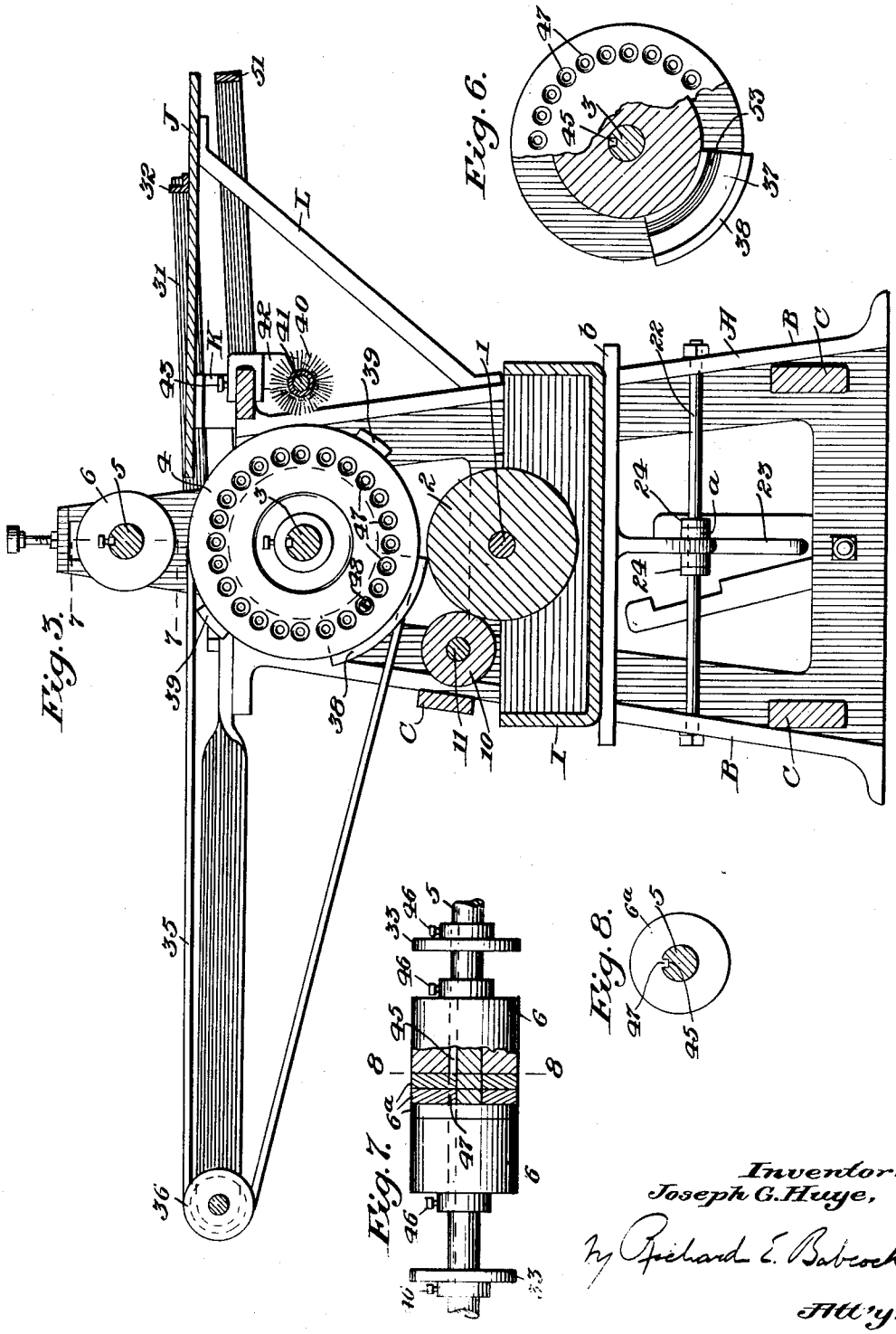


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Inventor:
Joseph G. Huye,
by Richard E. Babcock
Atty.

Oct. 15, 1929. J. G. HUYE 1,731,307

ADJUSTABLE ROTARY STENCILING PASTING MACHINE

Filed June 24, 1926 4 Sheets-Sheet 4

Fig. 5.

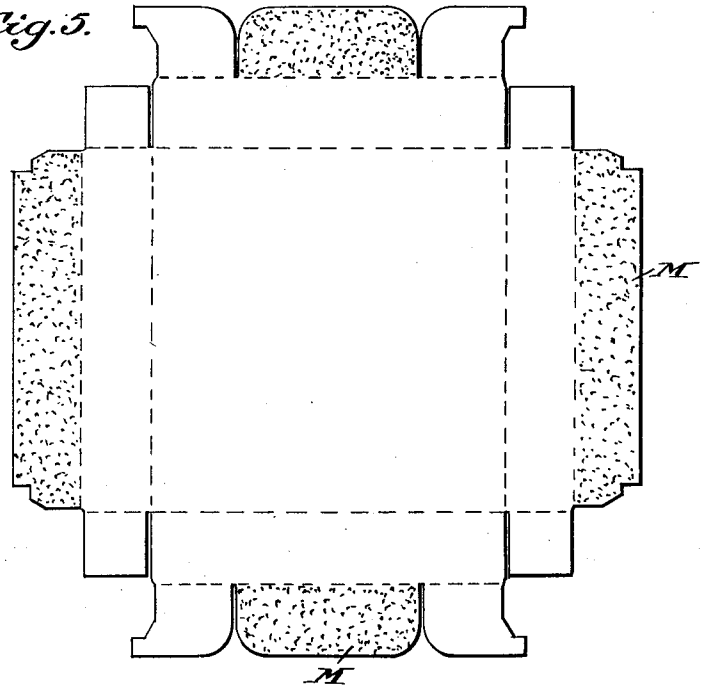


Fig. 9.

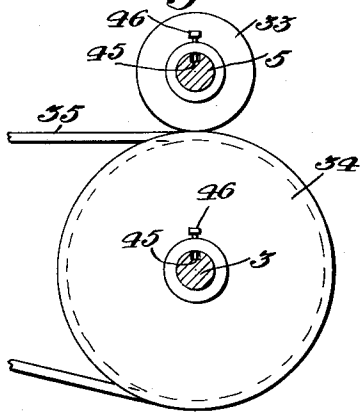
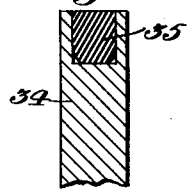


Fig. 10.



Inventor:
Joseph G. Huye,
by Richard E. Babcock
Atty.

Patented Oct. 15, 1929 1,731,307

UNITED STATES PATENT OFFICE

JOSEPH G. HUYE, OF NEW ORLEANS, LOUISIANA

ADJUSTABLE ROTARY STENCILING-PASTING MACHINE

Application filed June 24, 1926. Serial No. 118,249.

This invention relates to a glue stenciling or applying machine primarily for use in the manufactured paper or paste-board art, being intended more particularly for use in applying glue or paste to the desired portions of box blanks in the paper-board or paste-board box industry, though of course it is not limited to this industry.

The primary objects of this invention are: to provide a rotary glue or paste applying apparatus or stenciling machine; to provide such a rotary apparatus so constructed that the relationship of the glue-applying or paster feet may be adjusted throughout a very wide range of different sizes and shapes of boxes with consequent variation of points of application of glue, paste or other adhesive; to provide in such an apparatus rotary carrying means for the paster feet constructed in such manner as to permit independent angular adjustment of the feet about said carrying means; to so form said feet and cooperating carrying means as to make it practical to have a regular set or font, or sets or fonts of paster feet, varying in width and length, but all, of course, being on the same arc; to provide means for preventing the formation of edge ridges of glue; to provide means preventing the formation of striations of paste or glue over the coated area; to provide easy operating means for the glue or paste pot; to provide means for locking said pot in either of two positions; and to provide a quick feed release means.

In the accompanying drawings, in which I have shown only the preferred form of my invention merely by way of illustration of the practice of my invention, as by law required, and with no intention of being restricted to said embodiment, it being recognized that the invention is capable of embodiment in a variety of forms:

Figure 1 represents a front elevation, partly in section and partly broken away, of an apparatus or glue stenciling machine embodying my invention;

Figure 2, an end elevation thereof;

Figure 3, a sectional view on the line 3—3 of Fig. 1;

Figure 4, a detail end elevation taken between the gearing and the machine frame and looking toward the latter to show clearly the pressure or feed release;

Figure 5, a detail of a box blank, being one of a great number this machine will apply glue to, and being the particular box blank for which the paster-feet and carrying means therefor are adjusted as illustrated in Figure 1;

Figure 6, a detail side view, partially broken away, of one of the paster feet rolls or carriers with one of the said paster feet adjusted in the slot thereof;

Figure 7, a fragmentary detail longitudinal sectional view on the line 7—7 of Figure 3, illustrating a composite presser element and the upper feed wheels 33 as adjustably mounted on the shaft 5;

Figure 8, a detail sectional view taken on the line 8—8 of Figure 7;

Figure 9, a detail sectional view on the line 9—9 of Fig. 1; and

Figure 10, an enlarged detail fragmentary cross-sectional view through one of the grooved wheels 34 with one of the rubber bands of the conveyor lying therein, illustrating the clearance between the inner corners of said band and the opposed faces of the groove in said wheel, whereby free running of the said bands over said wheels is promoted.

Referring now in detail to the drawings, the main machine frame, that part carrying all the shaft bearings, excepting those of the spreader brush and the front conveyor pulley, will preferably be of one integral cast piece, though this is not vital, and comprises two roughly triangular shape ends A having usual bracing ribs or webs B, said ends being connected as usual by integral bars or beams C, three being illustrated.

The shafts 1, 3 and 5 respectively of the paste or glue supplying roll 2, the paster-feet carrying discs, means or pulleys 4, and the smoothing means or rolls 6 respectively, are all mounted in suitable bearings in said ends A with their axes all parallel to each other, the axes of said shafts 1 and 3 being relatively immovable, all of the axes of said shafts being preferably arranged, as illustrated, in

the same vertical plane, though this is not essential; and the shaft 5 being mounted in blocks slidable in a vertical direction in slots 7 and being normally forced toward shaft 3 by pressure springs 8 adjusted by screws 9 locked in adjusted position by suitable lock nuts, said shaft 5 being capable of being moved away from the shaft 3 sufficiently so that in case one of the blanks fails to feed for any reason or the operator misses a blank, the smoothing elements or backing 6 may be moved away from the paster feet sufficiently to be out of the path of travel thereof and so will not be coated with glue or paste.

A worker or squeegee roll 10 fixed on shaft 11 extends through enlarged or elongated openings 12 in the ends A and is mounted in brackets 13 pivotally adjustable about bolts 14 respectively, and may be locked in adjusted position by bolts 15 turning into the respective ends A through slots 16 in said brackets, which may be provided with set screws 17 respectively.

A drive wheel or belt wheel E is keyed to the shaft 3 outside of said frame, a motor F having a drive pulley G may be provided, as illustrated in Figure 2, a belt H extending about said pulleys E and G and serving to drive the former from the latter.

Between said pulley E and the adjacent end A, a gear wheel 19 is fixed to the shaft 3 to rotate therewith and meshes with gear wheels 18 and 20 similarly fixed to the shafts 1 and 5 respectively to rotate therewith.

The shaft 11 of the squeegee roll 10 has secured to its end portion adjacent the gear 18 a gear 21 normally in mesh with said gear 18 to be driven thereby, so that the squeegee roll 10 and paste or glue supplying roll 2 will rotate in opposite directions.

The squeegee roll 10 may be adjusted toward or from the paste supplying roll 2 as the occasion therefor arises by means of operating the bolts 14 and 15 suitably and swinging the brackets 13 about the bolts 14 as required, as usual.

The glue or paste pot I is of usual construction, as illustrated in Figures 1, 2 and 3, having the central portion of its upper end edges cut out so as to fit about the shaft 1.

In order to provide for easily raising and lowering this glue or paste pot as conditions from time to time may call for, I provide special means comprising a bolt, rod or stationary shaft 22 extending horizontally across the lower portion of each end A, for instance mounted in the ribs or webs B thereof, a lever 23 having an elongated hub *a* held centrally on said rod 22 by stop collars 24 and prevented from wobbling or tilting thereon by reason of its elongated bearing contact therewith, being provided at its inner end with a wide flat piece or beam *b* extending from side to side of the paste pot I and in engagement with the bottom thereof to support the same in lowering or raising as well as in the various raised or lower positions thereof. The cross-heads or beams *b* of the levers 23 may be of such length, as illustrated, that in their extreme lowered position, they will span and rest on the upper edges of the two lower connecting beams or bars C of the integral frame, so freeing the levers 23 of the burden of the paste-pot I, and a locking means comprising a V-shaped element pivotally connected to the end A by a bolt or pin 25 centrally disposed with relation to said lever and having a short notched arm 26 and a longer notched arm 27, is provided, the short arm 26 being adapted to receive the lever 23 in its notch and hook over the same to hold the free end in its extreme low position so that the inner end thereof is thus locked in its highest position, and the long arm 27 being adapted to similarly receive the lever 23 in its notch and hook over the same to hold the free end of the lever 23 in intermediate raised position, the inner end of said lever consequently being locked in intermediate lowered position.

From the foregoing it will be quite apparent that with this lever and lock operating construction for raising and lowering the glue or paste pot I it is very easy for a single operator without help to raise and lower the paste or glue pot without any risk, or fear, of upsetting it, or other accident and without undue exertion or strain, simply by moving one end to intermediate position and then locking it, then moving the other end to intermediate position and locking it, and then repeating the operation to the desired extreme raised or lowered position.

To feed the blanks to the best advantage to the rotary pasting or gluing means I provide a work table J at the rear of the frame and supported by short brackets K and longer brackets L secured to said frame at the ends A thereof and to said table in any suitable manner.

Each extreme end portion of the shaft 3 is provided with a transversely slotted or grooved hub 28 carrying in said slot binding bolts 29 for adjustably clamping in said slot the slotted cooperating arms 30 to rotate therewith, said arms 30 being pivotally connected with adjustable length links 31 carrying between their rear portions a kicker or feed bar 32 extending across said work table J. So that the range of movement of the feed bar or kicker 32 and the time thereof may be fairly closely adjusted by means of the above construction in accordance with present known practice.

As the kicker or bar 32 completes its movement toward the shafts 5 and 3 the forward edge of the blank shoved forward by said kicker 32 shoves between, and is gripped by, the oppositely rotating gripping wheels or feed wheels 33, slidably keyed to shaft 5, as

illustrated in Figures 3, 6 and 9, and the cooperating registering grooved wheels 34 also slidably keyed to the shaft 3, as illustrated in Figures 3, 6 and 9, rubber conveyer bands or belts 35 lying in the grooves of said wheels 34 flush with the outer periphery thereof, but taking no part in the gripping of the blanks, which is performed by the metal of wheels 33 in opposition to the metal of wheels 34, the rubber bands or conveyer belts 35 simply serving to receive the blanks as they are fed forward in the gluing or pasting operation and to convey them along the conveyer toward the idle roller 36 in the front thereof, after being coated with paste at M, the pasted blanks being removed by suitably stationed operatives in their travel toward the front of the conveyer, which may be of any suitable length to suit the speed of operation of the machine to allow for a suitable number of attendants to remove the blanks as they progress through the apparatus; or to allow a determined period for seasoning before the blank is further operated upon.

The springs 8 of course provide the necessary pressure and permit any necessary yielding in such gripping by the wheels 33 and 34.

The grooves in the wheels 34 preferably will have sharp inner corners, and the inner lateral portions of the rubber bands or belts 35 will be cut away, the otherwise sharp right angle being tapered or rounded off as illustrated in Fig. 10, a wedge shape, however, being preferably avoided, to give a free running contact of the bands 35 in the grooves of the wheels 34. However, this feature, while preferred, is not essential, the same purpose, also, may be accomplished in other ways.

The grooved or slotted paster-feet carrying rolls 4 are adjustably slidably keyed to their shaft 3, each of them is provided with a central deep peripheral groove or slot adapted to receive the tails or stubs 37 of the paster or gluer feet 38 and 39, which are all cut from the same stock and on the same arc, the inner faces of the feet 38 and 39 in each instance fitting snugly at all points against the opposed portion of the periphery of the respective discs 4, and the thickness of the feet 38 and 39 is such that, as illustrated in Fig. 3, when mounted in the discs or carriers 4 and rotated therewith they will engage the paste-supplying roll 2 to pick up paste therefrom, and contact with the presser rolls 6 to apply paste to any sheet material fed between said rolls 6 and the feet 38 or 39, the shaft 5 yielding a little, is necessary, as permitted by springs 8, to permit this passage of cardboard.

It is of importance, of course, that the rubber conveyer bands 35 should not pick up paste from the paste supplying roll 2 or elsewhere for obvious reasons, and therefore the wheels 34 will be made slightly smaller in radius than the combined radius of the discs 4 and feet 38 or 39, say about one sixty-fourth of an inch, and the wheels 33 will be made a corresponding amount greater in radius than the presser or backing elements 6, the combined radii of the pairs of operative elements in each instance being equal.

Experience in applying paste or adhesive with rotary or reciprocating gluing or pasting machines has demonstrated the fact that apparently too much glue is picked up, or picked up unevenly, with the result that striations are formed, and also in very definite ridges about the edges of the coated area, so that in the further operation on the blank and application of pressure to paste two surfaces together, the excess adhesive making up such ridges is squeezed out with ruinous results so far as other similar blanks being compressed therewith are concerned.

The present invention has sought to cure this defect by providing means for wiping the excess adhesive from the paster feet 38 and 39 and to leave but a very thin uniform film thereon as the feet 38 and 39 pass a given point in their rotation after they leave the paste-supplying roll 2 and before they reach the presser rolls or elements 6, and preferably at such approximate point that any excess adhesive will drop clear of the surface of the paster-feet 38 and 39 at the point of engagement thereof with the wiping means, and to this end I have provided in this embodiment a rotary wiping brush 40 mounted on a shaft 41 mounted in brackets 42 clamped by bolts 43 to the frame as illustrated in Fig. 3, and driven by belt 44 passing over pulleys on shafts 3 and 41 so that the adjacent portion of the brush or wiper 40 will be rotating downwardly in opposition to the upward rotary movement of the adjacent portions of the paster feet 38 and 39.

The presser rolls or backing elements 6 may be arranged in groups of two, if desired, as shown in Fig. 1 in opposition to the wide paster feet 39, or may be used singly in opposition to narrower paster feet such as 38; or may be used in groups of two with interposed supplemental discs 6^a as shown in Figure 7.

The shaft 5 is slotted for its full length as at 45, as illustrated in Figures 3, 6, 7, 8 and 9, and the smoothing or presser rolls or backing elements 6 are each provided with a binding locking screw 46 which normally seats in said slot 45 to act as a key to prevent independent rotation between the shaft 5 and the elements 6, and also binds in said slot in order that after said collars 6 have been adjusted on said shaft 5 to register with the cooperating paster-feet 38 and 39 respectively they may be locked in such relation against movement endwise of said shaft 5 by tighten-

ing up their respective binding locking screws 46.

Where paster feet 38 of such relative width as illustrated in Figure 1 are employed, a single pressing roll 6 on the shaft 5 cooperating with its respective paster foot 38 is sufficient, likewise for the intermediate wider paster-feet 39 a wider presser roll or backing is necessary, this being provided by arranging two rolls 6 with their adjacent opposed end faces in contact, as illustrated in Fig. 1.

If a wider paster foot than 39 is to be used, of such width as to extend beyond the ends of the two such combined rolls 6 making up the central composite presser or backing roll, filler discs or thin sections or rolls 6^a having integral keys 47 fitting in the key-way or slot 45, as illustrated in Fig. 8, may be interposed, two, or three or more, as necessary, as illustrated in Fig. 7, between the opposed rolls 6, which are to be shoved toward each other against the intervening filler rolls or discs 6^a so as to present a smooth continuous composite cylindrical and peripheral face for the full length of the composite presser or backing roll, the locking screws 46 then being turned up tight to frictionally engage tightly in said groove or slot 45 to hold all parts of such composite presser or backing roll in such relative arrangement.

Of course each of the presser rolls 6 as illustrated in Figure 1 may be combined with other opposed rolls 6 and interposed rolls 6^a, as illustrated in Fig. 7, this not being a modification, but merely an illustration of the preferred form assembled to take care of wide paster-feet where unusually wide paste areas are called for.

In like manner the shaft 3 is slotted as at 45 and the discs or rolls 4 are provided with screws 46 fitting in said slot 45 for the same purpose as above mentioned with relation to the similar screws of the presser rolls 6, and the same applies as to the feed wheels 33 and 34.

Thus, the presser elements or backing rolls 6, whether single or composite, and the elements 4 carrying the paster feet 38 and 39 are adjustable axially of their respective shafts to any positions thereon, and to any axial positions with relation to each other, as may be necessitated by the work, the respective presser or backing elements 6 and elements 4 being always arranged, however, in registry for cooperation.

Also, of course, the feed wheels 33 on shaft 5 and 34 on shaft 3 are relatively adjustable lengthwise of their respective shafts as may be necessary in accordance with the blank to be fed and the arrangement of the presser elements 6 and the elements 4 on the respective shafts 5 and 3, to grip the blanks and draw them successively between the elements 6 and the paster feet 38 and 39 carried by the cooperating elements 4, for this purpose it being essential that the respective feed wheels 33 shall be in registry with the respective feed wheels 34.

Each paster-foot carrying element 4 is provided in one side with a plurality of laterally extending intermediate screw-threaded bores 47, as illustrated in Figures 3 and 6, to receive a binding screw or screws 48 to clamp against the ribs or tails 37 of the paster feet 38 or 39, as the case may be, to hold said presser feet correctly positioned in the respective elements 4, the plurality of bores permitting the location of said presser feet at any point about the periphery of the elements 4 so that the timing mechanism will not need to be adjusted or changed often, and then but slightly.

From the above it is obvious that if for any reason the feed wheels 33 and 34 fail to grip and pull a blank between the elements 6 and 4, the paster feet 38 and 39 will come into direct contact with the elements 6 and deposit paste or glue thereon, so that the next blank fed through would stick to the paste or glue coated elements 6, or at best would be ruined by being indiscriminately covered with adhesive. To enable the operator to avoid this, I apply bracket arms 49 to each end of the shaft 5 and pivotally connect the lower ends thereof by bolts 50 to a U-shape frame 51 having its free ends pivotally mounted by bolts 52 on the ends A considerably in front of the shaft 5 and below the same and having its bar extending across just beneath the rear end of the work table J, so that the operator on seeing the feed wheels 33 and 34 miss and no blank fed through, may simply squeeze his hand together about the rear edge of the table J and frame 51, moving the bar of the latter toward table J and so raising the shaft 5 sufficiently, say about one sixty-fourth of an inch, away from shaft 3, so that the paster feet will not come into contact with the elements 6.

Preferably the ribs or tails of each presser foot 38 or 39 will be grooved as at 53 so that in case the screw 48 be not turned up tight, still its point will project into the groove 53 and hold the particular foot against being thrown off by centrifugal force or dropping off by gravity.

The paster feet 38 and 39 will have knurled operative faces for picking up the paste or glue and depositing it, and will be all from the same stock and, of course, all extend on the same arc, so as to be supported by the peripheral faces of the elements 4 interchangeably.

These paster-feet 38 and 39 will run in regular series or fonts, being comparable in this way to fonts of type.

The paster-feet 38 will come in a finely divided range starting with a length of about an inch and running to a length equal to ap-

proximately half the diameter of the elements 4, each length coming in widths starting say with an eighth of an inch and running by increases of an eighth of an inch to say two inches in width; the paster feet 39 similarly starting with a width say of two inches and running by half inch sizes up to say fourteen inches or more in width, and varying in length, in a peripheral direction, in each width size, from an eighth of an inch up to say six inches by eighth inch increases up to the first inch and thereafter by inches, so that with the plurality of fonts of paster feet 38 and 39 practically any length and width of paste may be applied at any desired points on the blanks. If a strip of paste longer than the longest paster feet is called for additional lengths 38 of the same width to make up the desired length may be applied to the respective elements 4 and locked by the screws 48 respectively, so as to make up composite paster feet 38 as necessary.

Likewise, if the widest paster feet 39 are not wide enough, additional elements 4 may be slipped on shaft 3, and arranged close to central element 4 and a plurality of paster feet 39 together making up the required width with their sides in engagement mounted in said elements 4, including the central element 4, so as to make up an extremely wide composite paster foot 39.

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

1. In combination, a rotary paste supplying roll, rotary driven elements, paster-feet respectively carried by said rotary elements, driven rotary presser or backing elements respectively registering with and cooperating with said paster-feet, said rotary elements and said presser elements each being relatively axially adjustable, individual means for locking all said rotary elements in adjusted position, and means for feeding blanks between said paster-feet and the cooperating backing elements.

2. In combination, a rotary paste supplying roll, rotary driven elements, paster-feet respectivly carried by said rotary elements, rotary backing means respectively registering with and cooperating with said paster-feet, said rotary elements and said backing means each being relatively axially adjustable, means for feeding blanks between said paster-feet and the cooperating backing means, and means for stripping excess paste from said paster-feet.

3. In combination, paste supplying means, rotary driven elements, paster-feet respectively carried by said elements, driven rotary backing means respectively registering with, and cooperating with, said paster-feet, said rotary elements and said backing means being relatively axially adjustable, means for feeding blanks between said paster-feet and backing means, and means permitting adjustment of said paster-feet respectively to any angular position of adjustment about their respective elements and whereby said paster-feet may be locked in such adjusted positions respectively.

4. In combination, paste supplying means, rotary elements, paster-feet carried by the respective elements and receiving paste from said means, rotary driven backing means registering and cooperating with said paster-feet respectively, and opposed rotary means for feeding blanks between said paster-feet and backing means, said feeding means being adjustable in an axial direction with relation to each of said elements and said backing means.

5. In combination, paste supplying means, rotary elements, paster-feet carried by the respective elements and receiving paste from said means, rotary driven backing means registering and cooperating with said paster-feet respectively, and a plurality of pairs of opposed rotary means for feeding blanks between said paster-feet and said backing means, said pairs of feeding means being axially adjustable with relation to each other and to said paster-feet and said backing means.

6. In paste applying apparatus, a rigid frame, a paste-supplying roll mounted therein, and a paste-pot, in combination with means for manipulating said paste-pot, said means comprising independent levers pivotally mounted, one at each end, to operate in a vertical plane, each having a wide head engaging and supporting the adjacent end portion of said paste-pot and having a wide bearing preventing wobbling, and means for locking said levers independently in any one of several positions, whereby the ends of said paste-pot may be alternately raised or lowered step by step by a single operator.

7. For use in a rotary pasting machine, a paster-foot having a peripherally extending face adapted to fit uniformly against the peripheral face of its rotary supporting element of said machine and provided with a shank extending at right angles from its rear face and adapted to fit into a recess in the said supporting element.

In testimony whereof, I have signed my name to this specification at New Orleans, Louisiana, this 22 day of June, 1926.

JOSEPH G. HUYE.