

No. 676,793.

Patented June 18, 1901.

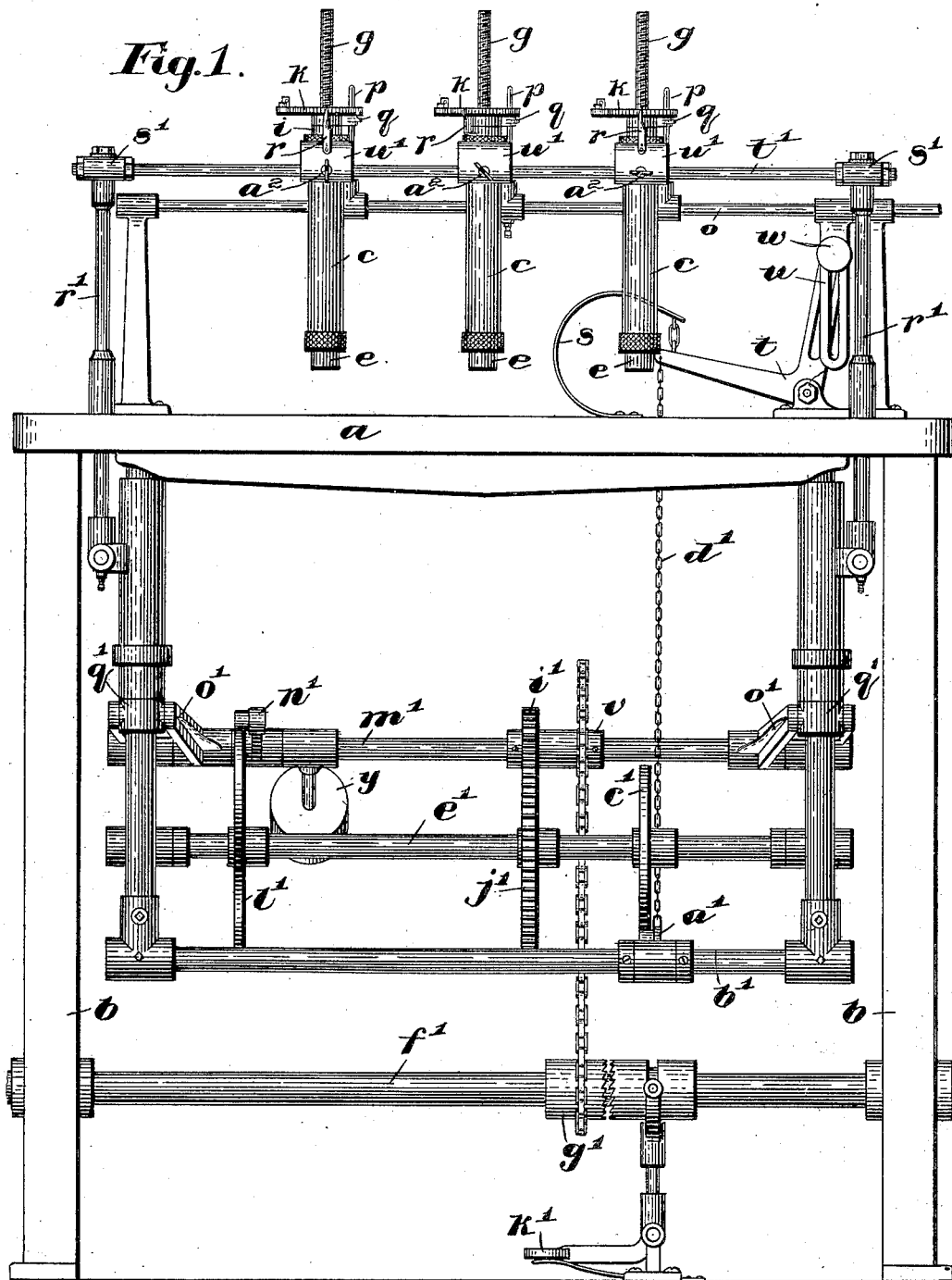
A. D. FENWICK.

PASTING MACHINE FOR COLLARS, &c.

(Application filed Sept. 12, 1899.)

(No Model.)

4 Sheets—Sheet 1.



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4 Sheets—Sheet 2.

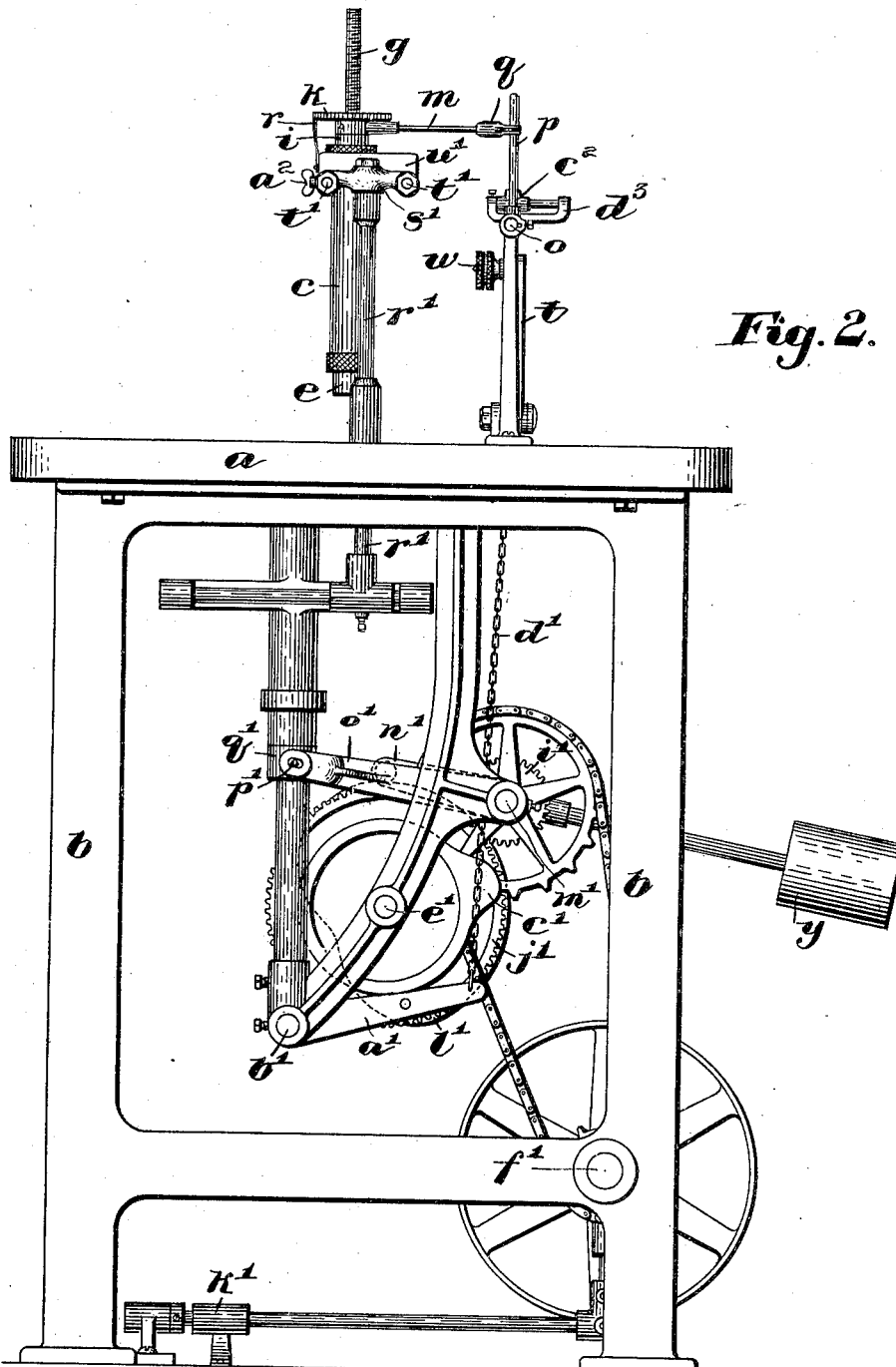


Fig. 2.

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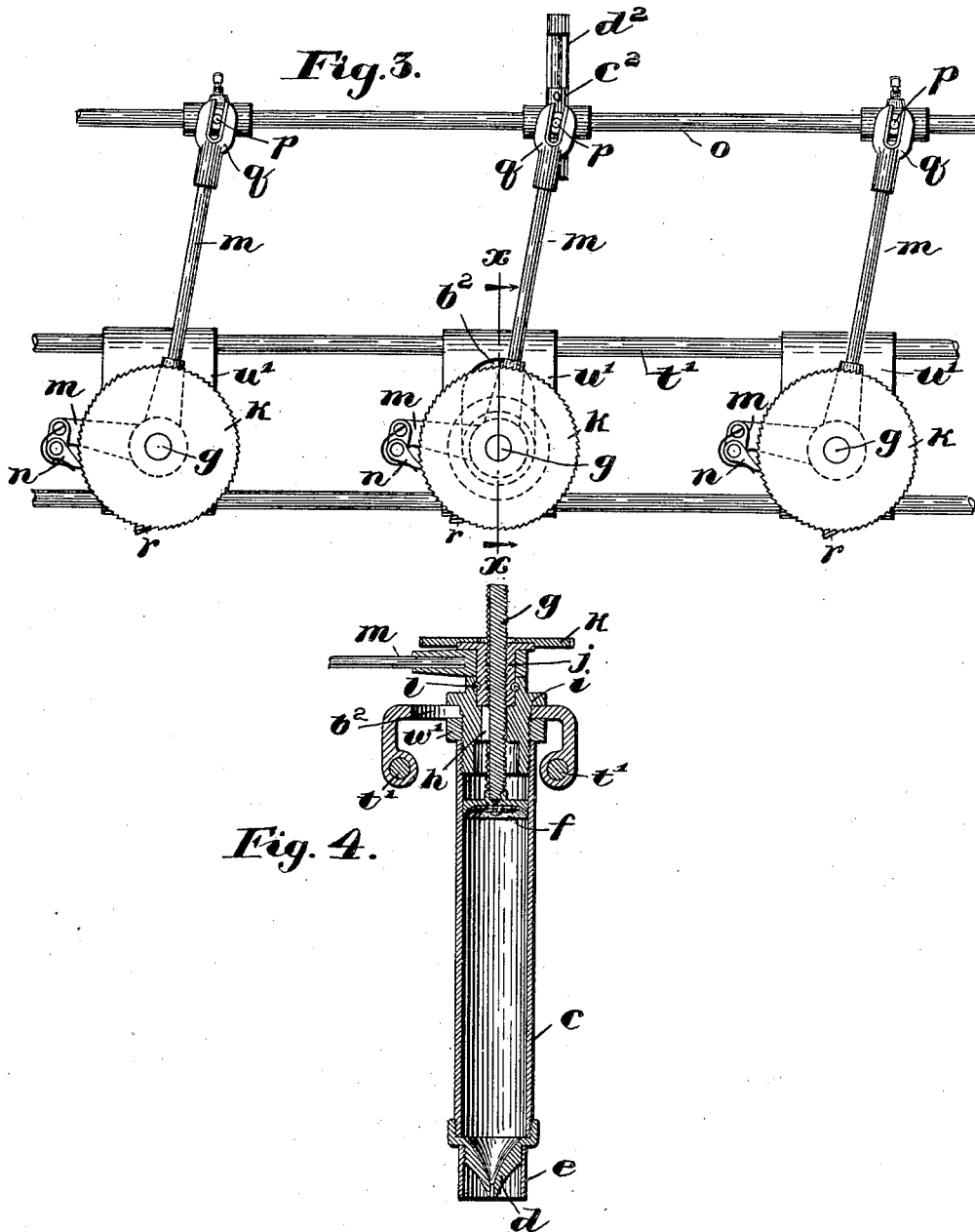
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(No Model.)

4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

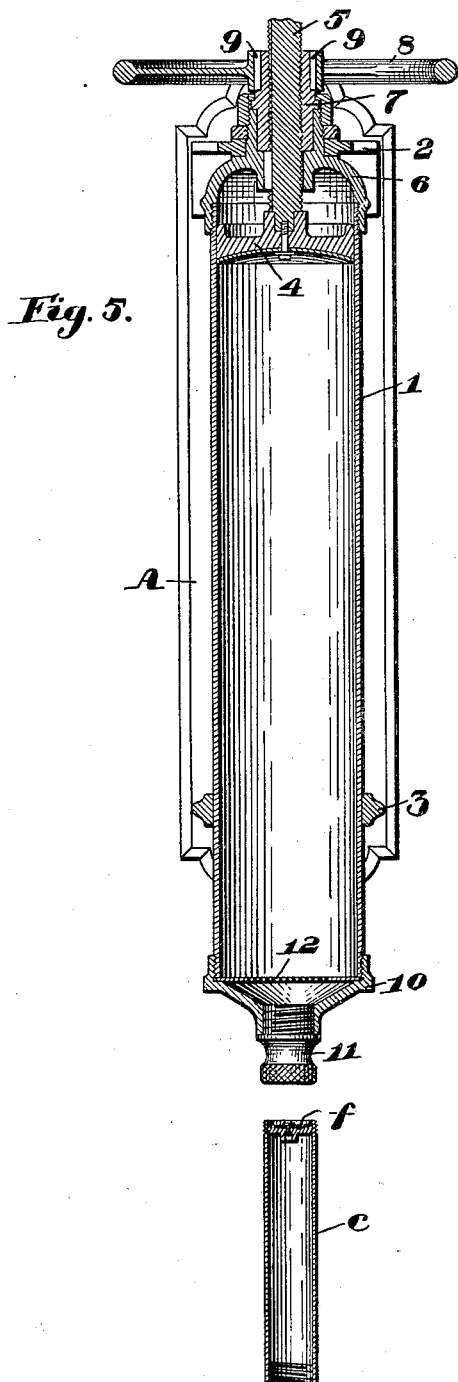
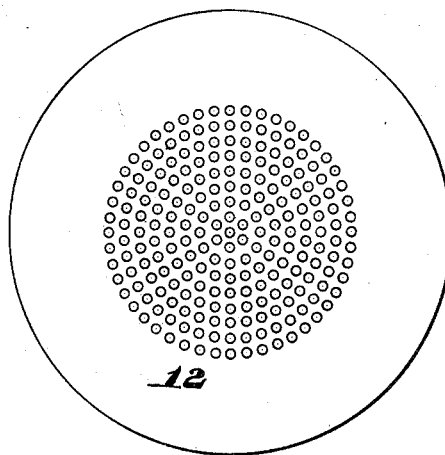


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT D. FENWICK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE A. D. FENWICK MACHINE CO., OF SAME PLACE.

PASTING-MACHINE FOR COLLARS, &c.

SPECIFICATION forming part of Letters Patent No. 676,793, dated June 18, 1901.

Application filed September 12, 1899. Serial No. 730,220. (No model.)

To all whom it may concern:

Be it known that I, ALBERT D. FENWICK, a citizen of the United States, and a resident of Boston, Massachusetts, have invented certain new and useful Improvements in Pasting-Machines, of which the following is a specification.

My invention relates to pasting-machines, and is particularly intended for use in applying paste to the blanks of collars and cuffs preparatory to pasting such blanks together and stitching them. Heretofore this work has been done by hand and has been slow and not altogether satisfactory, as a careless operator might apply too much paste or apply it at the wrong points on the blank.

It is the object of my invention to provide a construction that shall make it possible both to apply the paste more rapidly than by hand and to do it in a more satisfactory manner.

To this end my invention consists in combining with suitable actuating mechanism a series of paste-carrying tubes or fingers arranged and adapted to deposit an accurately-regulated quantity of paste at any desired points on the blank to be pasted.

Another feature which characterizes my invention consists in providing for the paste a reservoir from which the air may be wholly excluded, so that it cannot mingle with the paste and cause it to sour or spoil.

A third novel characteristic consists in combining with the paste-applying means novel mechanism for accurately regulating the quantity of paste supplied thereto within any desired limits.

Still another feature consists in so arranging the paste-applying fingers and the operating mechanism that the paste may be applied at any desired points and to different forms and sizes of blanks.

These and other features of my invention will be particularly explained in the following specification and clearly set forth in the claims.

Referring now to the drawings, in which I have illustrated one of the modes of embodying my invention, Figure 1 is a side elevation of the entire machine. Fig. 2 is an end elevation thereof. Fig. 3 is a plan view showing the means for supplying the paste to the

ends of the fingers in properly-regulated quantities. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 3. Fig. 5 is a central vertical section showing the device for filling the paste-tubes, one of the tubes being shown immediately below ready to be attached for filling. Fig. 6 is a plan view of the strainer contained in the filling device.

In the practice of my invention as illustrated in the drawings I provide a suitable table *a* resting upon the framework *b* of the machine, which serves to support in proper position the blanks to be pasted.

The paste carrying and applying device comprises a tube or reservoir *c*, provided at its lower end with a short substantially conical nozzle *d*, which has an outlet at its apex. The nozzle is detachable from the tube. Upon the exterior of the nozzle is secured a ring or guard *e*, whose lower edge lies slightly below the plane of the contracted end or point of the nozzle. A plunger or piston *f*, having a suitable packing-disk secured to its bottom, fits closely the bore of said tube and is forced downward by means of a screw-threaded plunger-rod *g*, whose lower end rests loosely in a socket on the upper face of the plunger. The plunger-rod is prevented from turning by a spline connection *h* with the flanged head *i*. An internally-threaded rotatable hub *j*, having secured to its top ratchet-disk *k*, serves to depress the plunger in the tube. Gibs or pins *l* may be employed to prevent the withdrawal of the hub from the head without interfering with its turning. An arm or lever *m*, loosely mounted to turn on the hub *j* and provided with a spring-pawl *n*, serves to intermittently rotate the ratchet-disk *k* and the hub *j*. The means for oscillating said pawl-carrying arm to actuate the disk consists of a reciprocating rod *o*, mounted to slide in suitable brackets and having projecting fingers *p* engaging with the forked ends *q* of the arms *m*, so that as the rod slides it moves the arm *m* about the hub *j* as an axis. Each forward movement of the pawl carries the disk with it; but on the return movement of the pawl the disk is stationary, being held in place by spring-detents *r*. The fingers *p* may be secured to the rod *o* by means of sleeves provided with set-screws, so that they

may be properly adjusted. The slide-rod *o* is held normally pressed to the right through the action of the spring *s* and the slotted bell-crank lever *t*, which is connected with the slotted link *u* by an adjustable stud *w*. The slide-rod *o* is moved forward by means of the arm *a'* on the rock-shaft *b'*, which is actuated by a swell on the cam *c'*, said arm *a'* being connected to the bell-crank lever *t* by means of the chain *d'*. Motion is imparted to the drive-shaft *e'* from the power-shaft *f'* by means of the clutch-hub *g'*, the sprocket-chain *h'*, and its two sprocket-wheels, the idler-sleeves *v*, carrying the pinion *i'*, and the gear *j'*, which meshes with said pinion and is secured to the drive-shaft *e'*. A treadle *k'* serves to keep the clutch member in operative engagement when it is desired to run the machine. The drive-shaft *e'* carries the cam *c'*, whose function has already been explained. It also carries another cam *l'*, which actuates the rock-shaft *m'* through the medium of the arm *n'*. The rock-shaft *m'* is provided with slotted forked arms *o'*, which engage with pins *p'* on the sliding sleeves *q'*, which sleeves carry lifting-rods *r'*. These lifting-rods support cross-heads *s'*, in which are secured the rods *t'*, which thus form a carrier or frame for the paste-carrying tubes, which are adjustably secured thereon by means of the brackets *u'*, the flanged heads *z*, and the clamping wings or collars *w'*, the brackets *u'* being held rigidly and adjustably in place on the rods *t'* by means of the set-screws *a''*. To permit an adjustment of the tubes transversely to the rods *t'*, the bracket may be slotted, as shown at *b''* in Figs. 3 and 4. It is sufficient, however, to make the middle tube only adjustable in this way. To accommodate this adjustment without varying the length of the arm *m*, that moves the ratchet-disk, the sleeve *c''*, which carries the pin *p*, may be adjustably mounted in a yoke *d''*, adjustably secured to the slide-rod *o*. As the tube is moved back in its supporting-bracket the pin-carrying sleeve may be moved back a corresponding distance, so that it will properly engage the forked end *q* of the arm *m*.

From the foregoing it will be seen that the mechanism for actuating the plungers acts independently of the means for reciprocating the tubes, so that the extent of movement of either mechanism can be varied without affecting the movement of the other. Moreover, the change of relative position of the tubes to each other does not interfere with or vary the action of the paste-expelling means, since the expelling mechanism is capable of adjustment to accommodate any change in position of the tubes.

The operation is as follows: A pile of collar-blanks is laid upon the table in proper position beneath the paste-applying fingers. The operator then depresses the pedal *k'*, and thus starts the machine. Through the medium of the cam *l'*, the rock-shaft *m'* and its projecting arms, and the connecting-rods

the paste-fingers are alternately raised and lowered. As will be understood, the cam *l'* and the rock-shaft arms raise the vertically-reciprocating framework positively; but its descent is due only to gravity. In order to prevent jar, as well as to ease the running of the machine, the rock-shaft may be partly counterbalanced by a weight *y*. The cam *c'* is so coördinated in its action with reference to the cam *l'* that it depresses the arm *a'*, and thereby moves forward the slide-rod *o* when the paste-fingers are at the top of their traverse. This forward movement of the slide-rod swings the arm *m* through the arc of a circle, moving the ratchet-disk *k* and the hub *j* through a corresponding arc. The internal thread of the hub or sleeve *j*, acting upon the thread of the plunger-rod, causes said plunger-rod and the plunger to slightly descend, and thus to force a small quantity of paste through the contracted nozzle *d*, so that a drop of paste falls from each tube upon that point of the blank directly under it. The guard *e* projects slightly beyond the lower end of the nozzle and prevents the tube from descending far enough to allow the nozzle to come in direct contact with the blank, thereby making it impossible for the blank to stick to the paste-finger nozzle when the finger rises. As will be understood, the distance which the plunger descends at each operation depends upon the extent of the arc through which the ratchet-disk is moved by each stroke of the slide-rod, which in the construction shown is determined by the length of stroke of the slide-rod. The length of this stroke is varied by shifting the position of the adjustable stud or connecting-pin *w*. As shown in the drawings, this pin is set to give the maximum stroke, at which point the ratchet may be turned through an arc of, say, six teeth. By setting said pin at the bottom of the slot in the lever *t* it is obvious that the length of the stroke of the rod will be shortened in the ratio that the radius of the movement of the pin in its lower position bears to the radius of its movement in the highest position. As the quantity of paste applied will depend upon the distance that the plunger is depressed on each stroke, it will be seen that the feeding of the paste can be absolutely and accurately regulated by shifting the pin *w*.

I have provided a special device for filling the tubes or reservoirs with paste without allowing the air to mingle with it. One form of this device is shown in Fig. 5 and is somewhat similar in construction to the paste-tubes. It comprises a tube 1, which is screwed into a supporting-head 6, which carries a rotatable hub or sleeve 7, to which is secured a hand-wheel 8 by means of gibs 9. This hub is interiorly threaded to receive the threaded plunger-rod 5, which has a spline-groove connection with the head 6, as shown at 6^a, which prevents the rotation of the plunger-rod, though permitting it to move vertically in said head. The piston or plunger 4

is secured to the end of the rod 5 and is provided with a suitable packing-disk to make it fit snugly in the tube. The device is supported by the brackets 2 and 3, which may be attached to a backboard A or other suitable support. To the lower end of the tube is fitted a funnel-shaped cap or nozzle 10, whose central orifice is fitted with a female thread and receives a screw-plug 11. A strainer-disk 12 is supported at the lower end of the tube. The tube 1 is made very much larger than the paste-tubes *c* and is filled solid with paste.

When it is desired to fill the tube *c*, it is unscrewed at the top from the head *i*, care being taken to push the plunger *f* to the lower end of said tube, so that its under face is about flush with the lower end of the tube. The screw-plug 11 is then removed and the hand-wheel 8 turned until the solid core of paste appears at the mouth of the nozzle or cap 10. The tube *c*, with its lower end, containing the plunger, uppermost, is then screwed into the female thread of the nozzle 10. The plunger 4 is then forced down, thus squeezing the paste in a solid mass into the tube *c* without the admixture of any air. When the paste has driven the plunger *f* nearly to the other end of the tube *c*, the operation is stopped and the tube is removed and replaced in the machine.

The advantages secured by my invention involve the keeping of the paste in perfect condition, the avoidance of waste by not permitting the paste to dry or sour, and the accurate regulation of the quantity applied, so that neither too much nor too little will be used in each blank. It will be noticed also that the mechanism is so arranged that it acts in precisely the same way on the blank whether the pile of blanks be large or small. It also permits the application of the paste to exactly the right points of the blank whatever the size or shape of the collar or cuff blanks may be.

The rapidity with which the machine can be run is in practice limited only by the speed with which the operators can pick off the successive blanks and paste them.

It will be observed also that the paste-applying devices need have but a simple reciprocating movement in a vertical plane and that there is no necessity of employing mechanism for compounding a lateral movement with the vertical movement. As the weight of the reciprocating parts can be nearly counterbalanced, it is obvious that but very little power is required to run a machine.

It will be understood that the machine shown and described herein illustrates only one embodiment of my invention and that changes can be made in the form and arrangement of parts and that different mechanical movements from those actually described may be substituted to accomplish the same results.

Without, then, attempting to set forth all

the variations in construction of which my invention is capable or all the modes of its use, what I claim is—

1. In a machine for pasting blanks, the combination of a series of separate paste-tubes each having a single discharge-outlet comprising a short substantially conical nozzle having an opening at its apex, means for intermittently expelling the paste from said tubes at each operation of the machine, and means for moving said tubes in unison into proper position to apply the paste at the proper points on the blanks to be pasted, substantially as described.

2. In a machine for pasting blanks the combination of a series of paste-tubes each having a discharge nozzle or outlet, means for moving the tubes to and from the blanks to be pasted, mechanism for intermittently expelling the paste from said tubes, said expelling mechanism being in its operation independent of the movement of the tubes to and from the blanks, substantially as described.

3. In a machine for pasting blanks, the combination of a series of separate paste-tubes, each provided with a single independent outlet consisting of a short substantially conical nozzle having the opening at its apex, mechanism for intermittently expelling the paste from said tubes, means for varying the extent of movement of said paste-expelling mechanism in order to properly regulate the quantity of paste to be expelled at each operation, and mechanism for bringing the paste-tubes and the blanks to be pasted into proper relative position to deposit the paste expelled at predetermined points on the blank, substantially as described.

4. In a machine for applying paste to blanks, the combination of a series of separate paste-tubes each provided with an independent discharge-outlet, means for intermittently expelling the paste from said tubes at each operation of the machine, and means for positively lifting said tubes away from the pile of blanks and permitting them to descend again until their descent is checked by the pile of blanks to be pasted, substantially as described.

5. In a machine for pasting blanks, the combination of a series of separate paste-tubes, capable of adjustment to vary their relative positions to each other, each provided with a discharge-outlet, mechanism for intermittently expelling the paste from said tubes in their various positions of adjustment, and means for bringing said tubes and the blanks to be pasted into proper relative position to deposit the paste expelled at predetermined points on the blanks, substantially as described.

6. In a pasting-machine, the combination of a series of separate paste-tubes independently adjustable with relation to one another, mechanism for expelling the paste from said tubes, said mechanism being also provided

with corresponding adjustments to accommodate the changes in position of the paste-tubes, means substantially as described.

7. In a machine for pasting blanks, the combination of the paste-tubes, means for lifting them away from the blanks and permitting them to descend again, said tubes being provided with discharge-nozzles and with guards projecting below said nozzles and serving to stop the descent of the tubes by coming in contact with the pile of blanks, thereby preventing the blanks from adhering to the tubes as the tubes are raised, substantially as described.

8. In a machine for pasting blanks, the combination of a paste-carrying tube, a converging nozzle detachably secured to its lower end, and an annular guard surrounding said nozzle and projecting slightly below the end thereof, and means for expelling paste from the tube through said nozzle, substantially as described.

9. In a machine for pasting blanks, the combination of an elongated carrier-frame, a series of transverse brackets having sliding adjustment on said frame longitudinally thereof in order to vary their distances from each other, a paste carrying and applying finger secured to each bracket, one of said paste-applying fingers having a sliding adjustment in its supporting-bracket transversely of the carrier, whereby the fingers may be brought into or out of alinement, substantially as described.

10. In a machine for pasting blanks, the combination of a carrier-frame comprising the cross-heads and the parallel rods connecting them, the brackets having longitudinal sliding adjustment on said rods, the paste-tubes mounted in said brackets and carried thereby, one of said tubes having a sliding adjustment in its supporting-bracket, and mechanism connected with the cross-heads for reciprocating the carrier substantially as described.

11. In a machine for applying paste to blanks, the combination of a series of paste-tubes arranged to deliver paste at predetermined points on the blank to be pasted, plungers arranged to slide in said paste-tubes, plunger-rods for actuating said plungers to expel the paste, a slide-rod, means for actuating said slide-rod at each operation of the machine, and mechanism connecting said slide-rod with the plunger-rods and serving to depress the plunger-rods at each forward movement of the slide-rod, means for bringing the tubes and the blanks into proper relative position to deposit paste on the blanks, substantially as described.

12. In a machine for applying paste to blanks, the combination of a series of paste-tubes provided with outlets for the delivery of paste at proper points on the blanks, plungers arranged to slide in said tubes, a slide-rod-connecting mechanism for imparting movement from the slide to the plungers,

means for actuating said slide-rod, said actuating means being provided with an adjustment for varying the length of stroke of said slide-rod in order to regulate the movement of the plunger and thereby to vary the quantity of paste delivered, substantially as described.

13. In a machine for applying paste to blanks, the combination of a paste-applying finger, a reservoir for paste, a plunger for expelling paste from the reservoir through the finger, a slide-rod, connecting mechanism for imparting movement from the slide-rod to the plunger, a lever for actuating said slide-rod, said lever and slide-rod being adjustably connected to vary the length of stroke of the slide-rod in order to regulate the quantity of paste delivered at each stroke, substantially as described.

14. In a machine for applying paste to blanks, the combination with a paste-reservoir provided with an outlet for delivering paste to the blank, of a plunger fitted to slide therein to expel the paste through said outlet, a slide-rod, a lever having connection with slide-rod to actuate it, means for oscillating said lever about its fulcrum, and mechanism operatively connecting the slide-rod with the plunger, substantially as described.

15. In a pasting-machine, the combination of a reciprocating carrier, a paste-tube detachably supported thereon, the piston closely fitted to slide in said tube, a plunger-rod having loose engagement with said piston to force it in one direction to expel the paste, while freely permitting the removal of the tube with the plunger inside, whereby the tube may be filled with paste without intermingling air therewith, substantially as described.

16. In a pasting-machine the combination of a paste-holding receptacle having a discharge-outlet, a closely-fitting piston arranged to slide therein, means for forcing said piston toward the discharge-outlet to expel the paste, a paste-tube of smaller diameter than said receptacle, means whereby said tube may be detachably connected with said paste-receptacle, an imperforate piston adapted to be positioned at the open end of the tube that is connected with the paste-receptacle, whereby the paste expelled from the receptacle is caused to drive the piston toward the farther end of the tube, completely filling the entire tube behind the piston as it advances, substantially as described.

17. In a pasting-machine, the cylindrical paste-tube, a tapered discharge-nozzle, whose larger end corresponds with the diameter of the tube, detachably secured to one open end of the tube, means for detachably connecting said tube with a reciprocating support, a piston arranged to slide in said tube and actuating means for driving the piston toward the discharge-nozzle, substantially as described.

18. In a pasting-machine, the combination with a cylindrical paste-tube having open unobstructed ends and having a closely-fitting

piston adapted to slide therein, a filling-receptacle for holding paste, means whereby the paste-tube may be detachably secured to the filling-receptacle, and means for forcing the
5 paste from said receptacle into the paste-tube without permitting air to be mingled with the paste, substantially as described.

19. In a pasting-machine the combination
10 of a plurality of paste-tubes each of which contains a piston for expelling the paste from the tube, means for actuating said pistons to expel the paste in predetermined quantities from the respective tubes, a supporting-frame,

said tubes being so mounted in said frame as to permit variations being made in the relative positions of the tubes to each other, whereby the paste may be applied at predetermined points on the blanks, substantially as described. 15

In witness whereof I have hereunto set my hand. 20

ALBERT D. FENWICK.

In presence of—

GEO. N. GODDARD,
GEO. F. DINSMORE.