

(No Model.)

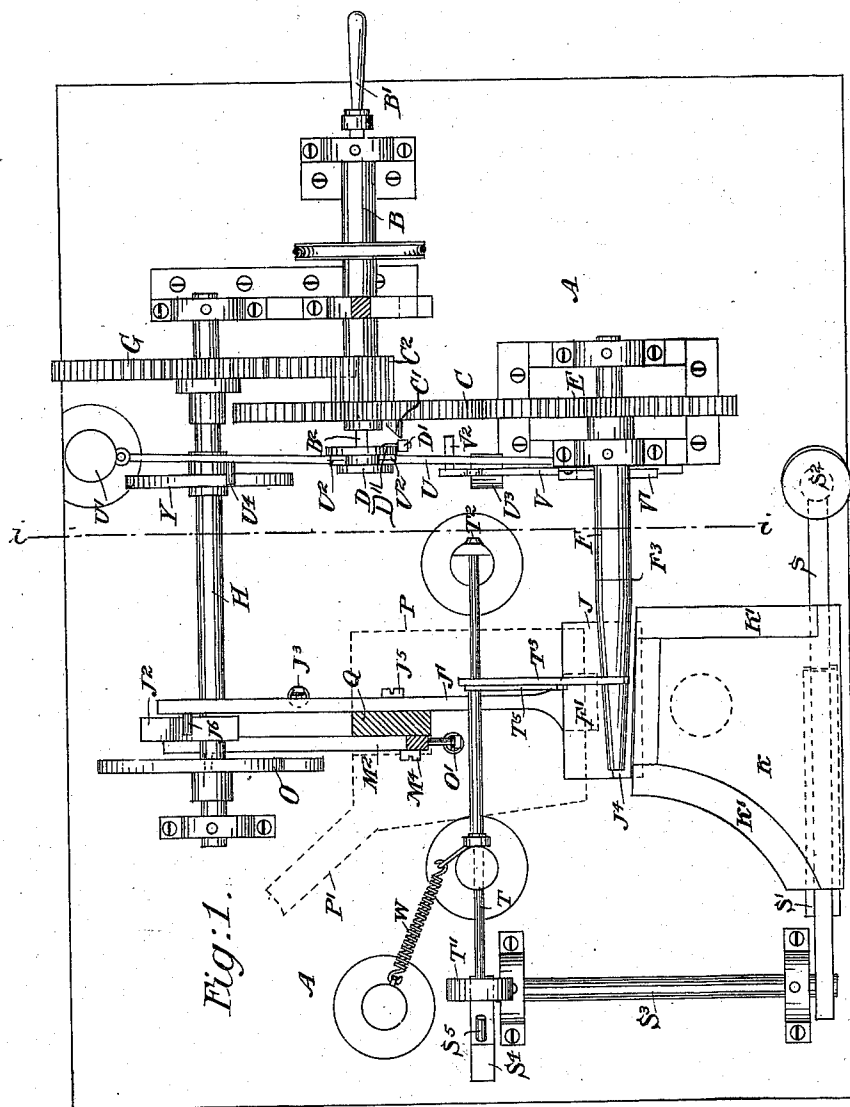
3 Sheets—Sheet 1.

J. S. BEEMAN.

MACHINE FOR MAKING MOUTHPIECES FOR CIGARETTES.

No. 547,196.

Patented Oct. 1, 1895.



Attest
Malvern Malsay
James M. O'Far

Inventor
Joseph Samuel Beeman
by Richards & Co
Atty's.

(No Model.)

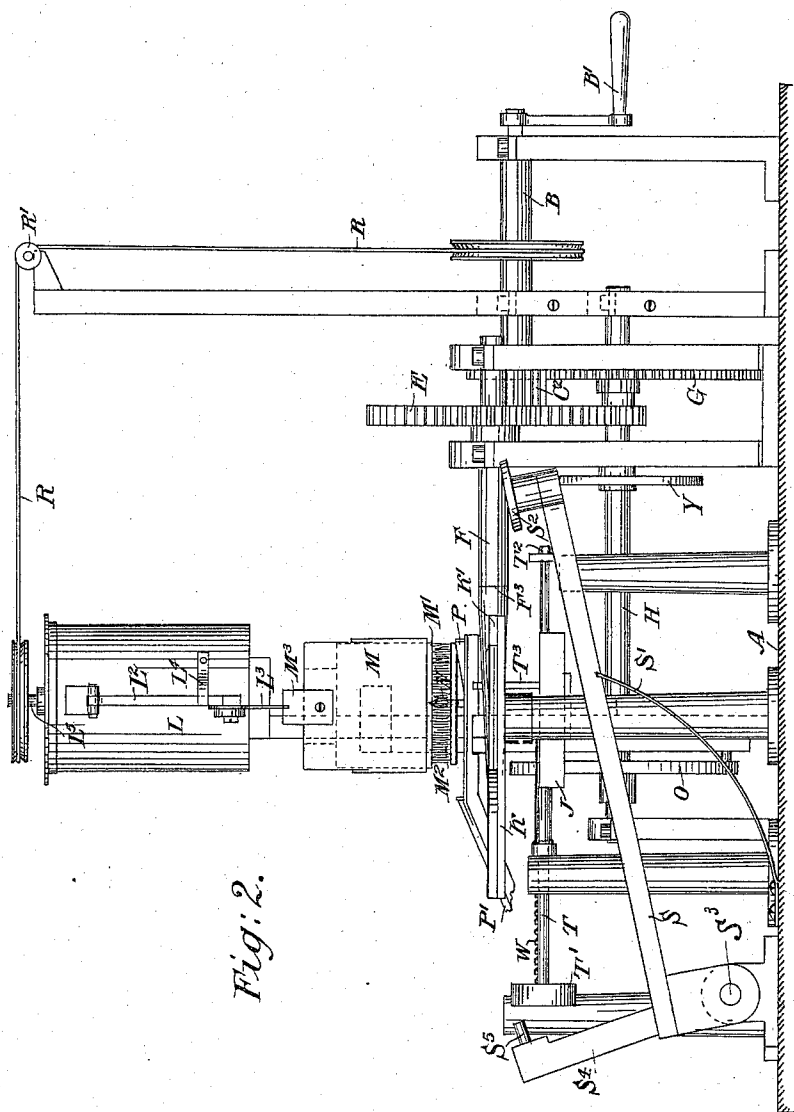
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J. S. BEEMAN.

MACHINE FOR MAKING MOUTHPIECES FOR CIGARETTES.

No. 547,196.

Patented Oct. 1, 1895.



Attest
Walter Donaldson
James M. Spear

Inventor
Joseph Samuel Beeman
by Richards & Co
Attys.

(No Model.)

3 Sheets—Sheet 3.

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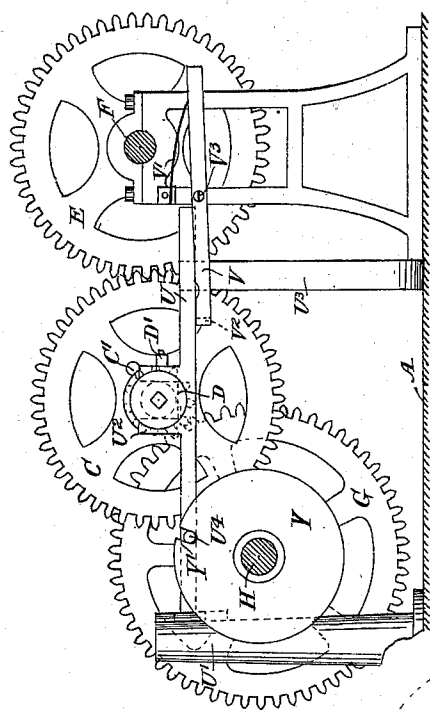


Fig. 4

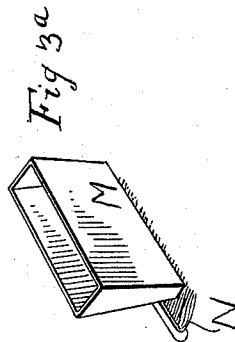


Fig. 3a

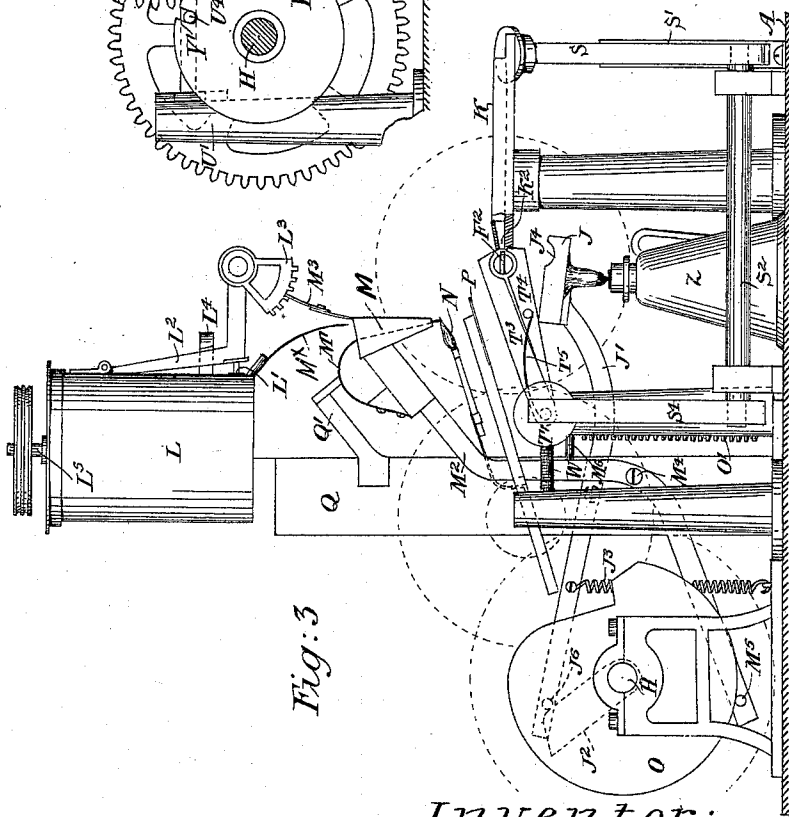


Fig. 3

Inventor:

Witnesses:

E. H. Bolton

E. H. Sturtevant.

Joseph Samuel Beeman

By *Richard R.*

his Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH SAMUEL BEEMAN, OF CAMBERWELL, VICTORIA.

MACHINE FOR MAKING MOUTHPIECES FOR CIGARETTES.

SPECIFICATION forming part of Letters Patent No. 547,196, dated October 1, 1895.

Application filed April 19, 1895. Serial No. 546,410. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SAMUEL BEEMAN, a citizen of Melbourne, a subject of the Queen of Great Britain, and a resident of Station Street, Camberwell, in the Colony of Victoria, Australia, have invented certain new and useful Improvements in or Connected with Apparatus for the Manufacture of Mouthpieces or Holders for Cigarettes and the Like, of which the following is a specification.

This invention has reference to machinery or apparatus for the manufacture of mouthpieces or holders of cigarettes and the like, and relates to an improved means for insuring a period of rest and the relative synchronous action of the different parts or portions of such said apparatus.

By the employment of my improvements paper slips or blanks are caused to assume the shape of cigarette-holders or mouthpieces and the like and to permanently retain such shape.

My improvements also cause the mouthpieces or holders when formed to readily leave the mandrel with promptness and facility.

In order that my invention may be the more easily understood, reference may be made to the accompanying drawings, in which—

Figure 1 is a plan view of a complete apparatus for manufacturing mouthpieces or holders embodying my improvements. Fig. 2 is a front elevation of same; Fig. 3, a side elevation. Fig. 3^a is a detail view of the paste funnel and brush, while Fig. 4 is a cross-sectional elevation at the dotted line *ii* on Fig. 1.

In the drawings similar letters denote similar parts.

A is a base or foundation plate, upon which is mounted a main shaft B, working in suitable bearings, said shaft B being provided with suitable mechanism, such as a handle B' or pulley, for operating same. Upon the said main shaft B is mounted loosely a wheel C C², which I shall call the "actuating-wheel"—that is to say, the actuating-wheel C C² may consist of two wheels of different diameters rigidly fixed together, so as to form one structure. For convenience and economy I prefer this wheel to be double geared; but if only single gear is employed it will be necessary to alter the diameters of the two other

wheels E and G, gearing with it, so as to insure the obtaining of the proper relative speeds. A portion B² of the main shaft B passes through and beyond the said actuating-wheel C C² and is so formed as to carry a clutch D or its equivalent, having an attachment D' to engage with a pin C' or similar projection on the actuating-wheel C C², previously mentioned. The part D' is held to the clutch D by an arm D''. As the clutch D always rotates with the main shaft B, it follows that when in gear with the actuating-wheel C C² it causes the actuating-wheel to rotate, or, vice versa, when out of gear the actuating-wheel C C² will not rotate if a slight obstruction or friction is applied to prevent it. I would here point out that in lieu or substitution of the toothed gearing illustrated I may employ belts or chain or friction wheels.

One part or side of the actuating-wheel C C² gears with a wheel E, mounted upon a shaft F, which said shaft F, for sake of convenience, I will call the "mandrel-shaft," which latter is provided with suitable bearings mounted on standards based upon the foundation-plate A. This said mandrel-shaft F passes through and projects beyond one of its bearings and terminates in the form of a mandrel F'. This mandrel F' may be of solid section and contain a saw cut or slit F² (see Fig. 3) in its end for receiving the end of the paper blank which is to be formed into a cigarette mouthpiece or holder, or the mandrel F' may be furnished with a spring-clip in lieu of the saw-cut to fulfill the same function. The paper slips or blanks proposed to be used with my improved apparatus may be of similar pattern to those now used for forming the hand-made paper mouthpieces. In some cases I may construct this mandrel F' or the whole shaft and mandrel F F' of a hollow section, so as to create a chamber in which steam, electric, or other heat may be supplied or circulated for the purpose of facilitating the gumming or adhesion of the prepared portion of the said paper strip or blank. Preferably, but not arbitrarily, the mandrel F' is of brass or gun-metal and is fastened to the mandrel-shaft by a screw or screw-thread, preferably at the line F³, instead of being turned out of the same piece of metal composing the mandrel-shaft F.

In some cases I arrange a method of heat-

ing the shaft by employing a jet or flame and arranging the same so as to impinge at a convenient point on the mandrel or mandrel-shaft near the larger diameter of the mandrel near
 5 F³ for the purpose of heating the mandrel F' by conduction.

Z (see Fig. 3) shows a class of lamp that may be employed to heat any of the parts under which it may be placed.

10 Referring again to the actuating-wheel, its pinion C² gears with the toothed wheel G upon the shaft H. This latter shaft, for convenience, I shall call the "operating-shaft," and the same is mounted in suitable bearings on
 15 standards based on the said foundation-plate A. The wheels C, C², E, and G are so proportioned as to allow the mandrel-shaft F making a certain definite number of complete revolutions (preferably about six) to one complete revolution of the operating-shaft H. The
 20 operating-shaft H aforesaid has attached to it a portion of a disk Y and also two cams O and J² or equivalent devices for holding or operating, respectively, pieces of mechanism which
 25 I term the "pressure-plate" and the "paster." The pressure-plate J is made of any suitable material capable of being heated and may be fastened to a lever J', centered at J⁵ (see Figs. 1 and 3) to standard Q. The shape of the
 30 pressure-plate J may be cylindrical and capable of moving on its axis or it may be a flat surface or other suitable shape. The aforesaid lever J' and pressure-plate J are preferably held out of action by a pin J⁶, acting on the
 35 cam J², and in action by a spring J³ in tension. The pressure-plate J may be formed with one or more recesses J⁴, according to the design of the said pressure-plate, and arranged to correspond with the mandrel F', so that when
 40 in its upward position and in contact with the paper upon the mandrel F' it is closely in contact with an appreciable part of the circumference of the paper mouthpiece under formation. Preferably the length of the pressure-plate with or without the recess or recesses is such that it extends both ways beyond the mouthpiece under formation in the direction of the length of the mandrel. When
 45 I apply heat to such a pressure-plate a convenient way is by a jet or flame of gas playing on a convenient part of the pressure-plate, (as see Fig. 3,) so that the direct heat from the flame never reaches the paper mouthpiece under formation. Up till now I have assumed
 50 that the sticking medium would not be supplied to the paper blank until it had already been partially wound upon the mandrel. Should, however, the sticking medium be applied beforehand to the paper blanks—say after the manner in which envelopes are ready
 60 provided with gum or sticking medium—then the paster hereinafter described would only supply water or other liquid to moisten the gum, and I can apply heat instead of to the
 65 mandrel or pressure-plate to the platform K or guide upon or through which the paper blanks are served to the mandrel, a convenient way

of doing which is by similar means to that already described for heating the mandrel, this heating of the blank having the gum
 70 thereon serving to soften the said gum. Any convenient mechanism can be used to regulate the supply of heat to the pressure-plate J, and also to the mandrel F', and also to the platform or guide K. Should, however, any
 75 of the sticking medium accidentally reach any part of the mechanism when heated, I find a convenient means for facilitating its removal is to rub or cause it to be rubbed while hot with a little soap or beeswax, aided by a
 80 brush of cloth used by hand or worked by the machine.

Although I have described only one way of heating either the mandrel F', pressure-plate J, or guide-platform K, I can use others—viz.,
 85 by making them hollow and introducing heated irons, as is done in the laundry-box or Italian irons, or by the application of a jet or a current of hot air or steam or current of electricity. A receptacle or reservoir for the
 90 sticking medium or water is mounted in a convenient position upon the foundation-plate and is provided with an adjustable outlet and means for regulating the flow of the sticking medium or water. From this reservoir the sticking medium (starch and cold
 95 water being a convenient medium) or water passes into the "paster" M, which may be somewhat of a V shape in section, the lower end of the V being open or furnished with a
 100 number of small holes, thus allowing the sticking medium to pass neatly out, and being more under control causing an even flow. This paster M is preferably provided with a tongue or tongues M', operating to keep the
 105 passage or passages clear. The clearing-tongue M' is depressed to clear the discharge-mouth of the funnel M each time the funnel rises by the tongue contacting with the projection Q', fixed to the standard Q, said tongue
 110 being fixed to and moving with the funnel. Adjustable brushes N or equivalents are sometimes provided near to the opening or openings at the lower point of the V to conduct away by its fibers and its supporting
 115 piece any surplus sticking medium that may have entered the paster M. Only one of these brushes is shown; but it will be understood that a series may be used, so that the whole width of the paster will have the brushes beneath to catch any drippings. The paster may
 120 be fastened to a lever M², centered at m¹, preferably held off and out of action by a cam O on the operating-shaft H and put into action by a spring O'. A small platform P,
 125 furnished with a duct P', is provided to catch and lead away any surplus sticking medium or water. In some cases I may heat this paster-box M by any approved heating means. A guide or shield M^x, Fig. 3, serves to direct
 130 the paste from the valve L' to the paste box or funnel M. This shield is supported by the reservoir L. Although only one paster is mentioned, I do not limit myself to one, as in

some cases I find it convenient to use two or more, and I do not limit myself to the lower end of the V-shaped paster being a straight line, as in some cases it is more convenient to be curved. The case where water is used in place of sticking medium in the paster M is when the end of the paper blank has been previously gummed and requires only to be moistened. The said reservoir or paster L may be provided with arms or stirrers on the shaft L⁵, (see Figs. 2 and 3,) said arms being caused to rotate in any convenient way, preferably by a small belt R, passing over pulleys R', actuated by the main shaft B, and is provided with a suitable outlet L', capable of being opened and closed by the action of some part of the machine, preferably a portion M³ of the paster M. This portion M³ meshes with the teeth of a segment L³, held on the end of a bent arm L², said arm being pivoted to the reservoir and controlling through a suitable valve (not shown in detail) the outlet L'. Each time the arm M³ lifts the funnel M the arm M³, striking the segment L³, fixed to the lever L², will move said lever outwardly from the reservoir L, and this will open a suitable valve at the point L', allowing the paste to drop into the funnel, and at the same time the clearer M' acts as a valve to stop up the discharge-mouth of the funnel. The outward movement of the lever L² to open the valve is limited by the stop L⁴. The segment L³ presents a broad toothed bearing-edge to insure contact with the arm M³. As the lever L² is pivoted at its upper end and the arm M³ contacts with the outer end of the lever—that is, at the segment L³—the movement of the lever must be outward and upward.

Mechanism is provided so that the operator can start the gearing to operate the mandrel and operating-shafts, but not to stop them, the stopping of the gearing being automatic in its action and may be arranged and operated as follows: A suitably-centered lever S or equivalent device, (called for sake of convenience the "operating-lever,") capable of being actuated, say, by the hand, knee, or foot of the operator, is held in its "out-of-action" position by a spring S' or equivalent, and upon being moved by the operator causes the axis S³ to partially rotate and move S⁴, causing head S⁵ to strike the head T' of a rod T or equivalent, (called for the sake of convenience the "starting-rod,") set in guides, causing the rod to travel, and the opposite end of the rod, which terminates in a head T², to press upon a long arm U or its equivalent mechanism, (called for the sake of convenience the "starting-arm,") pivoted or hinged to a support U'. This arm has an attachment U² for the purpose of loosely connecting the arm to the clutch D on the main shaft, so that while the clutch can rotate without moving the starting-arm any suitable movement of the starting-arm U causes the clutch to either enter into or be-

come out of gear with an attachment, such as a projecting pin C' on the "actuating-wheel" C. This starting-arm U is actuated in one direction by the combined action of the lever S and rod T, previously mentioned, and in the reverse direction by a spring U³. This starting-arm U may be furnished with a pin or wheel U⁴, so as to reduce friction, which, during part of the revolution of the portion of the disk Y on the operating-shaft, presses upon the surface of the portion of the said disk and then falls out of contact with it and into the notch Y' in the disk Y, and in this position the arm U has fallen, so as to disengage the clutch and to stop the operation of the mandrel, the parts being so arranged that the mandrel has at this time completed one movement. The starting-arm is again lifted when the operator desires to perform another operation, as hereinafter described. The starting-arm U, when in motion, actuates or causes to move a small arm V or equivalent, (called for the sake of convenience the "bent arm.") This bent arm is suitably centered at V³ and is actuated in one direction by a spring V' or its equivalent and may consist of a lever, one end V² of which may be in the form of an inclined plane or wedge, being bent at right angles to the main portion. The reverse action to that obtained by the spring is furnished by the travel of the starting-arm, which during its travel presses on the inclined portion of the bent arm and thus causes that end of the bent arm to either descend or ascend or proceed in any other direction, as may be desirable. The use of the bent arm is to retain in position the "starting-rod" T, which it does by engaging with the head T² of the said rod. The starting-rod T has either rigidly attached to it or suitably mounted upon it a piece of mechanism called the "kicker" T' T⁴. The object or use of the kicker is to remove the formed paper mouthpiece from the mandrel. The kicker may be formed of one or two blades. If of two, they are drawn together by a spring T⁵, the blade or blades being shaped so as to come into contact with the mandrel in more points than one and remain in contact with the mandrel during the operation of removing the paper mouthpiece. The kicker is actuated while removing the mouthpiece by a spring W, said spring at the same time moving the starting-rod back to the place it occupies when no mouthpiece is being formed. Said spring also performs another function—namely, the bringing of the principal blade of the kicker in more intimate contact with the mandrel—that is to say, the pull of the spring W tends to turn the rod T slightly and thus press the lower one T⁴ of the kicker-arms against the mandrel. In a suitable position near to the mandrel is erected a platform K, furnished with guides K', which cause the end of the paper blanks when placed on this platform to travel, when pushed by the operator or otherwise,

into the saw-cut F^2 or opening of the mandrel F' . This platform may also be heated by any approved means, as before mentioned.

The action of the mechanism is as follows:

- 5 It is presumed that the main shaft B is always rotating. The paper blank is placed on the platform K and thence fed into the opening F^2 of the mandrel F' . The operating-lever S being moved strikes the starting-rod
- 10 T, carrying it and its attached kicker $T^3 T^4$ forward. The head T^2 of the starting-rod T passes over the bent arm V and presses against the starting-arm U, the starting-arm thereby bringing the clutch D on the main
- 15 shaft into gear with the actuating-wheel C, thereby starting the gearing and mechanism connected therewith, and at the same time allowing the bent arm V to move and so be in readiness to retain the head T^2 of the
- 20 starting-rod T. The operating-lever S, being released by the attendant, allows the head T^2 of the starting-rod T to engage with and be held by the bent arm V and the pin U^4 on the
- 25 starting-arm to press against the portion of the disk Y, fastened to the operating-shaft H. The mandrel-shaft F' revolves and F' commences to draw the paper blank around it. At a convenient position of the paper blank
- 30 the lever M^2 , centered at M^4 , carrying the paster M, comes into action through the cam O, having released the pin M^5 , and allowing the spring J^3 to depress the lever M^2 deposits sufficient of the sticking medium or water upon
- 35 the paper blank as held by the mandrel. Then owing to the cam O having revolved sufficiently it commences to press upon pin M^5 and lifts the paster M from contact with the
- 40 paper blank and receives a fresh supply of sticking medium or water. By the same movement the spring-tongue M' presses against the arm Q' , fastened to Q, causing it to move and
- 45 so keep the passage or passages at the bottom of the paster M clear of obstruction. Meantime or prior to the paster having come into action the pressure-plate J has reached such a position as to be ready to fulfill its functions. The mandrel F' continues to revolve until
- 50 such time as the pin U^4 on the starting-arm U has been released from the portion of the disk Y on the operating-shaft H. The starting-arm U, being now released, moves upon its
- 55 axis, disengages the clutch D from the main shaft B, at the same time moving the bent arm V, which bent arm in turn releases the head T^2 of the starting-rod T, attached to
- 60 which is the kicker $T^3 T^4$, the pressure-plate J in contact with the paper mouthpiece having just immediately before been removed from contact. The machine now being at rest is ready for a fresh paper blank to be introduced.

Although it has been generally assumed in this description that the paper blanks are fed

by hand, this is not necessarily so, as the paper blanks can be fed by suitable mechanism after being cut out of the strips of paper by any suitable mechanism.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In combination, the mandrel, the constantly operating shaft B, the operating shaft H, means operated from said shaft H for acting on the paper blank connections from the constantly operating shaft to both the mandrel shaft and the operating shaft, a clutch controlling the said connections, means for throwing the said clutch into operation and holding the same in engagement and for automatically releasing the same to stop the mandrel and the operating shaft when the machine has completed one movement, substantially as described.

2. In combination, the mandrel, the means for acting on the blank while on the mandrel, the operating shaft with connections controlling said means, a driving shaft B, a clutch the connections from said driving shaft to the mandrel, and to the operating shaft controlled by said clutch, the starting arm controlling the clutch and the disk Y having the notch for controlling the starting arm, substantially as described.

3. In combination, the mandrel, the paster in the form of a funnel, means of supplying paste to the funnel and the brushes under the funnel, substantially as described.

4. In combination, the mandrel, the operating shaft means for pressing and pasting the blanks, the connections from the operating shaft to said means, the constantly operating shaft connections therefrom to the operating shaft and to the mandrel the clutch for controlling the said connections and the operation of the mandrel, the stripper arms and the reciprocating starting rod T carrying the same, means for holding the rod in moved position and arranged to be tripped when the machine has completed one movement, said rod carrying the strippers, substantially as described.

5. In combination, the mandrel with means for operating upon the blank, the paste reservoir, the paste funnel, the valve, the valve lever, means for raising and lowering the paste funnel, means for operating the valve lever from the rising movement of the funnel and the clearer M' arranged to enter the discharge mouth of the funnel when the same is raised, substantially as described.

Signed this 15th day of March, 1895.

JOSEPH SAMUEL BEEMAN.

Witnesses:

A. O. SACHSE,
A. HARKER.