E. M. HAWKINS.

SHEET COATING MACHINE.

APPLICATION FILED JULY 29, 1911.

1,133,024.

Patented Mar. 23, 1915.

6 SHEETS—SHEET 2.

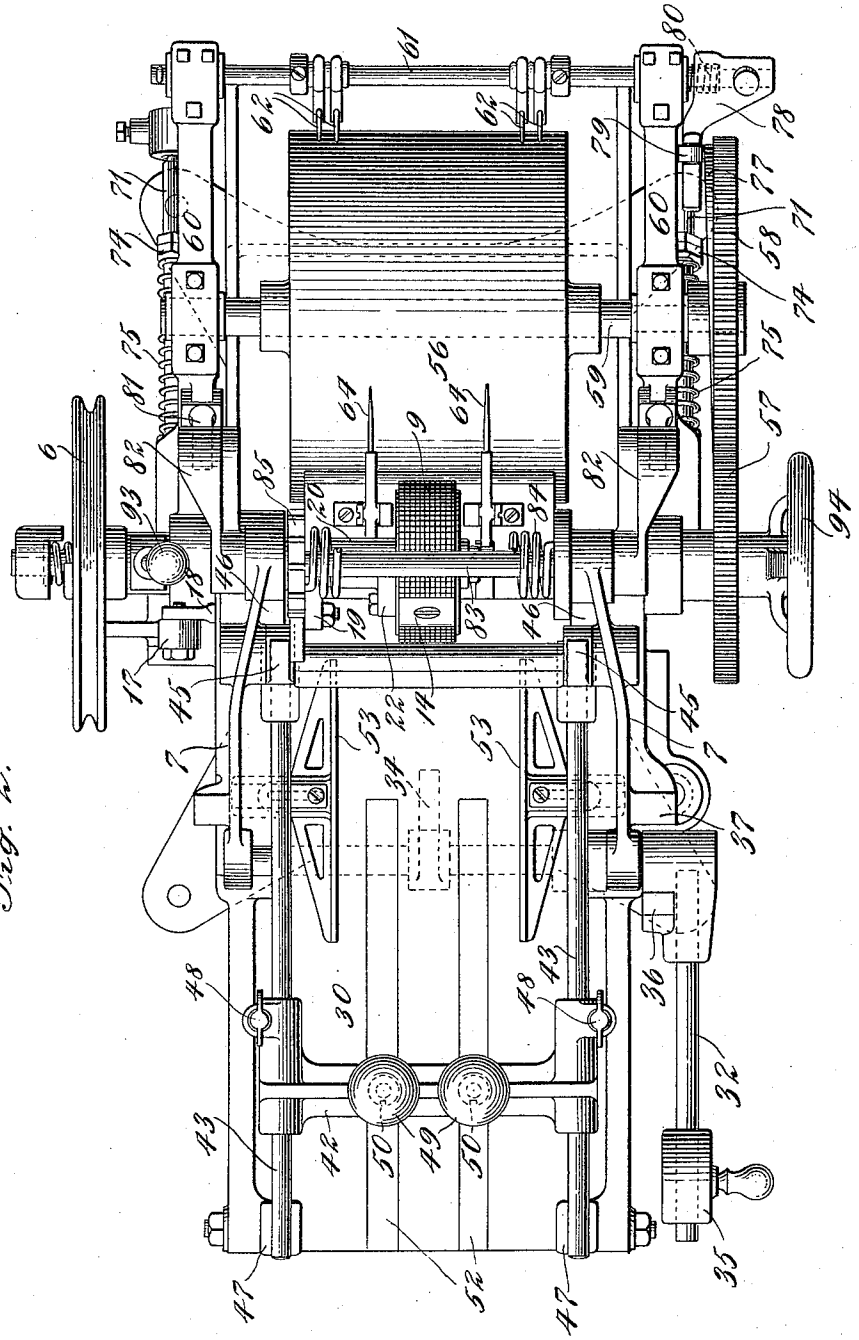


Fig. 2.

Witnesses:

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Inventor

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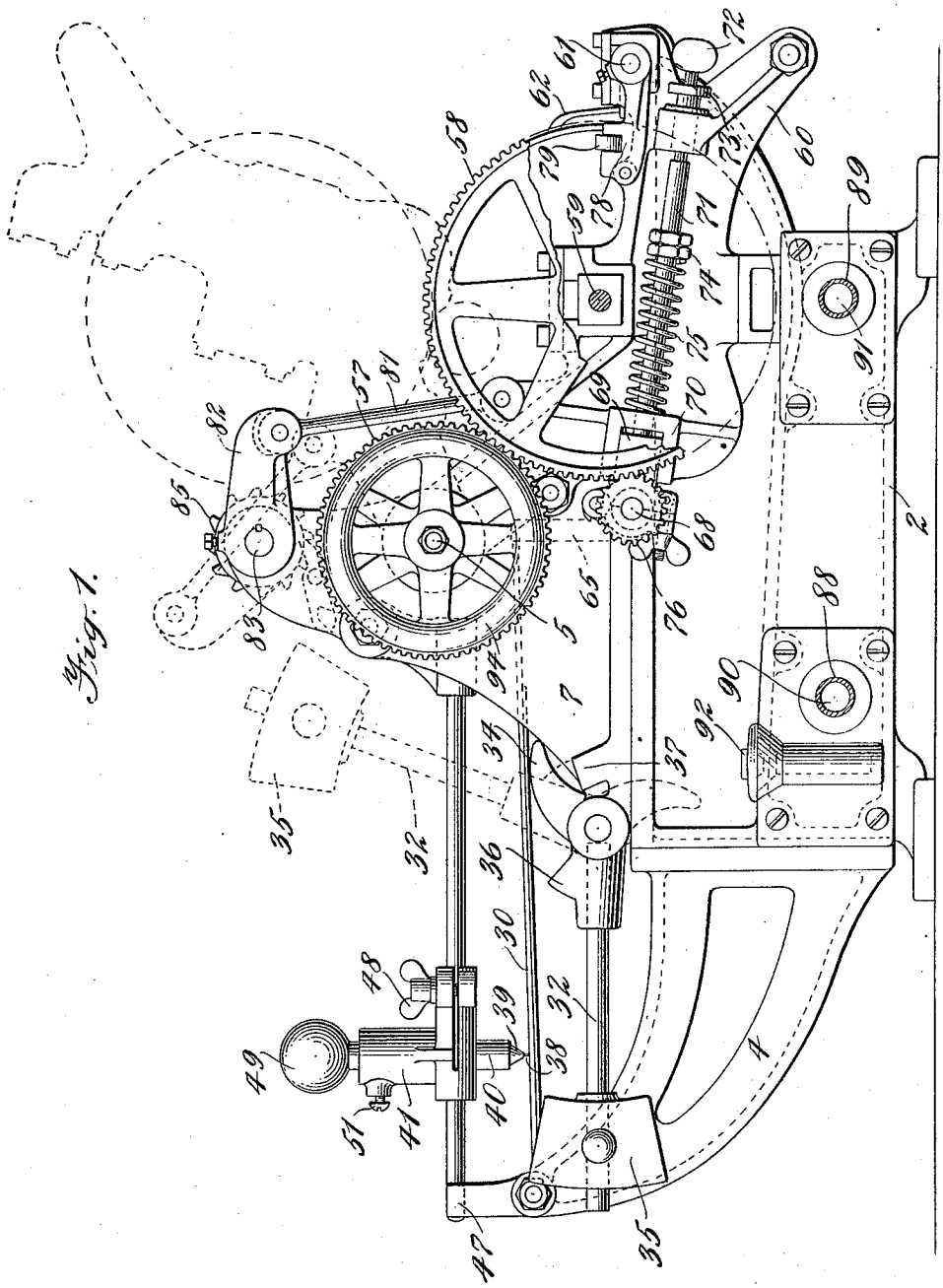


Fig. 1.

Witnesses:
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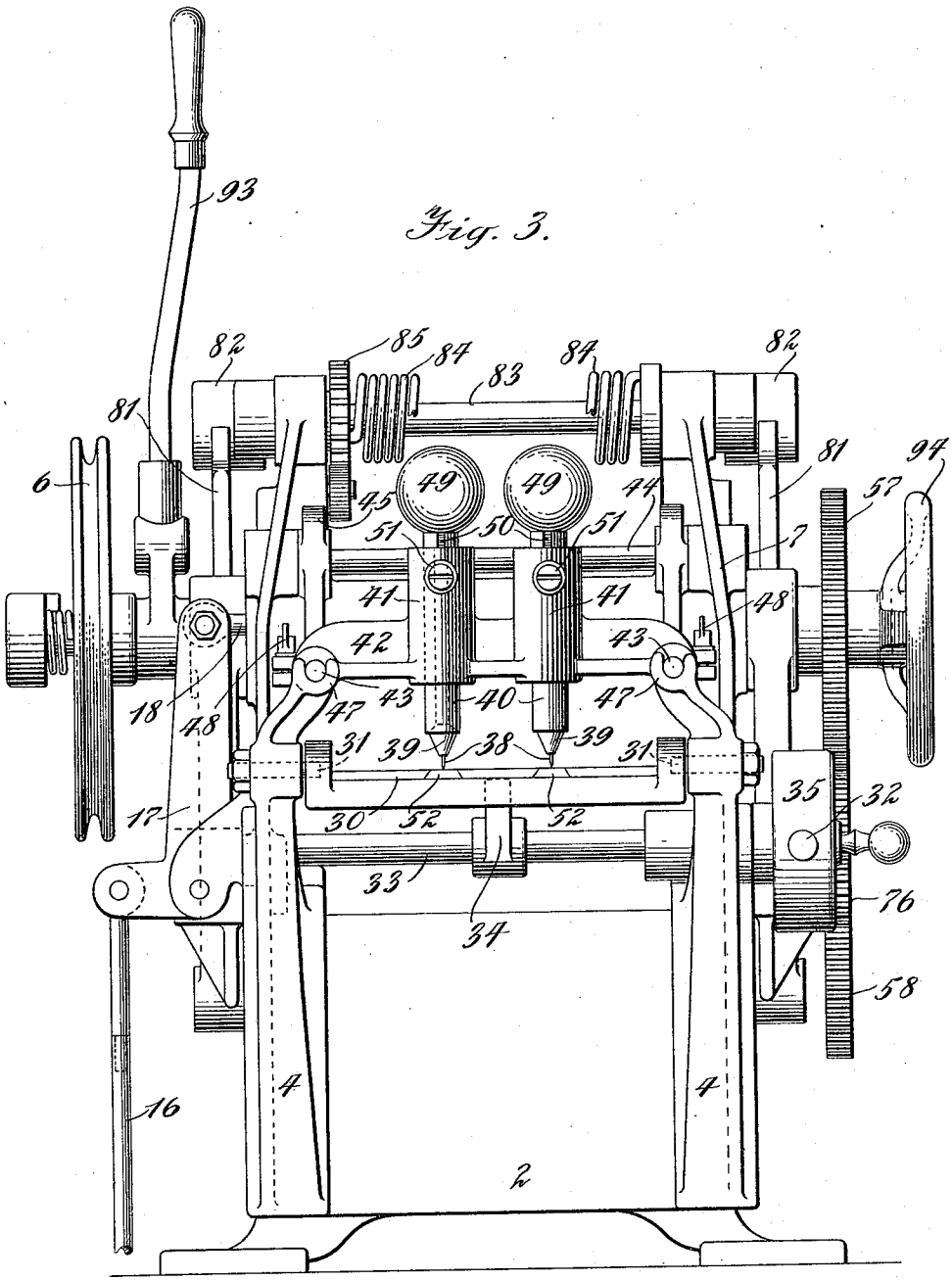
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6 SHEETS—SHEET 3.

Fig. 3.



Witnesses:

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SHEET COATING MACHINE.

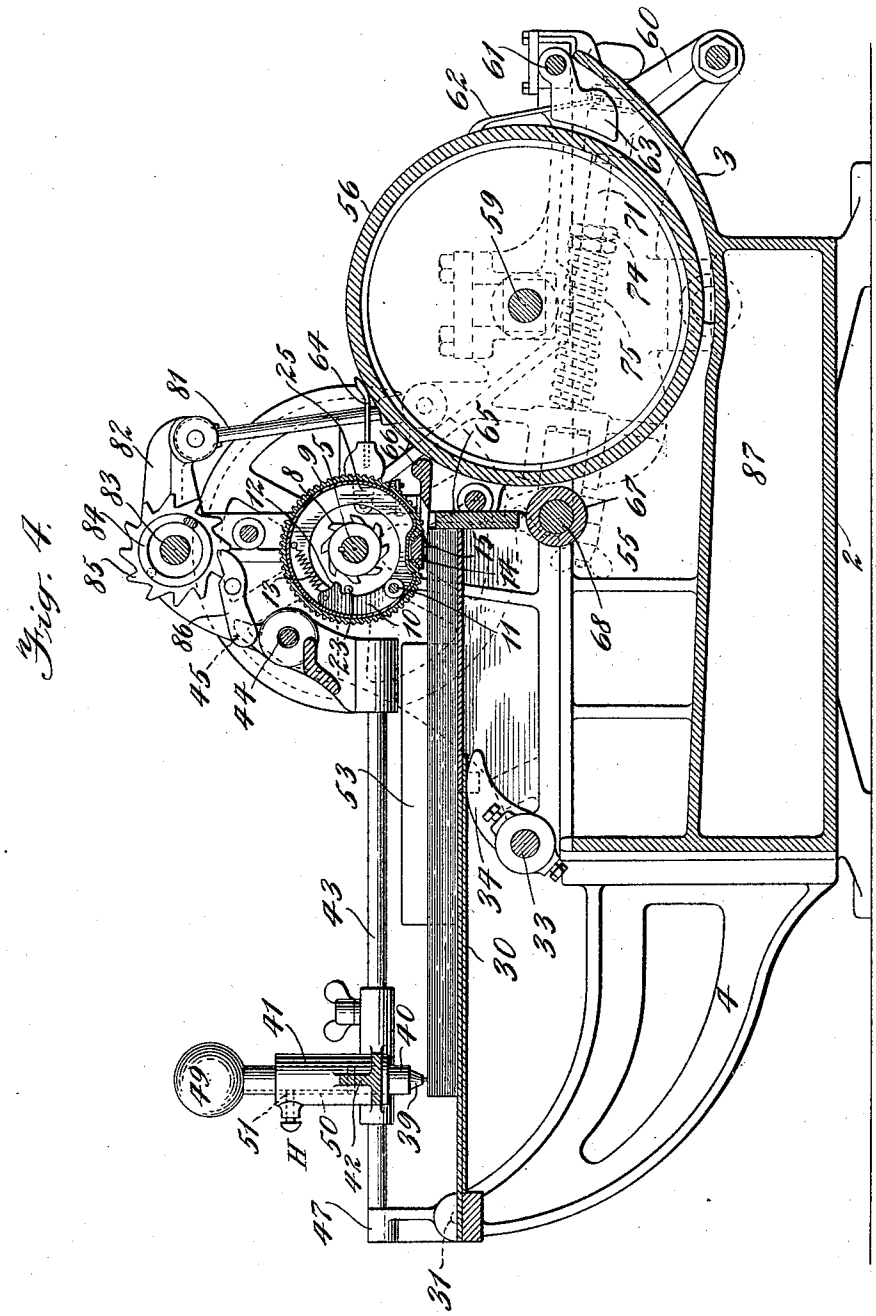
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6 SHEETS-SHEET 4.

Fig. 4.



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6 SHEETS—SHEET 5.

Fig. 6.

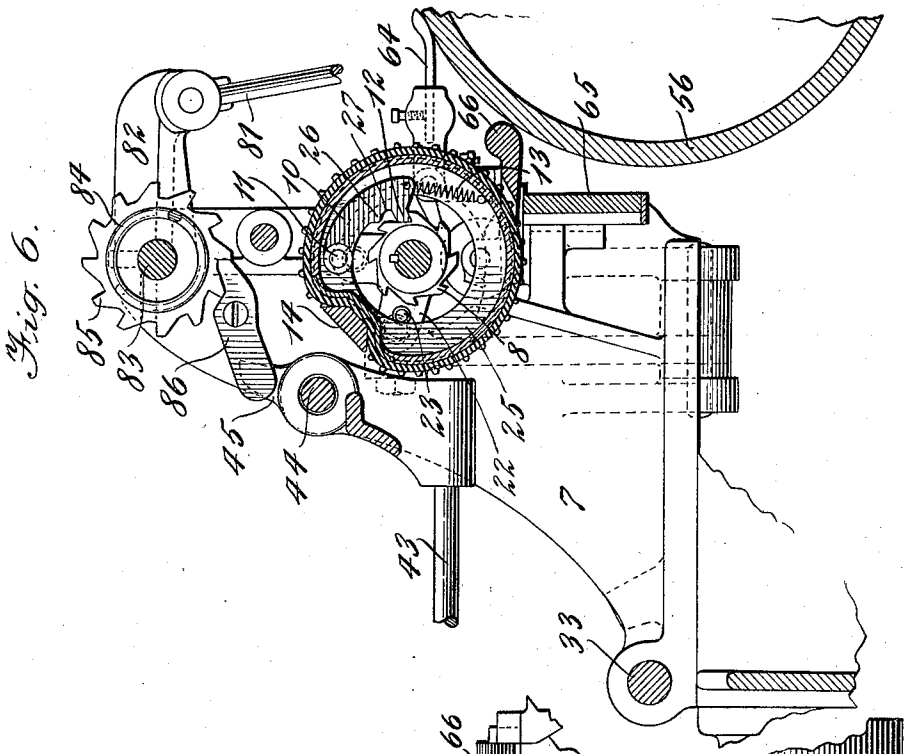
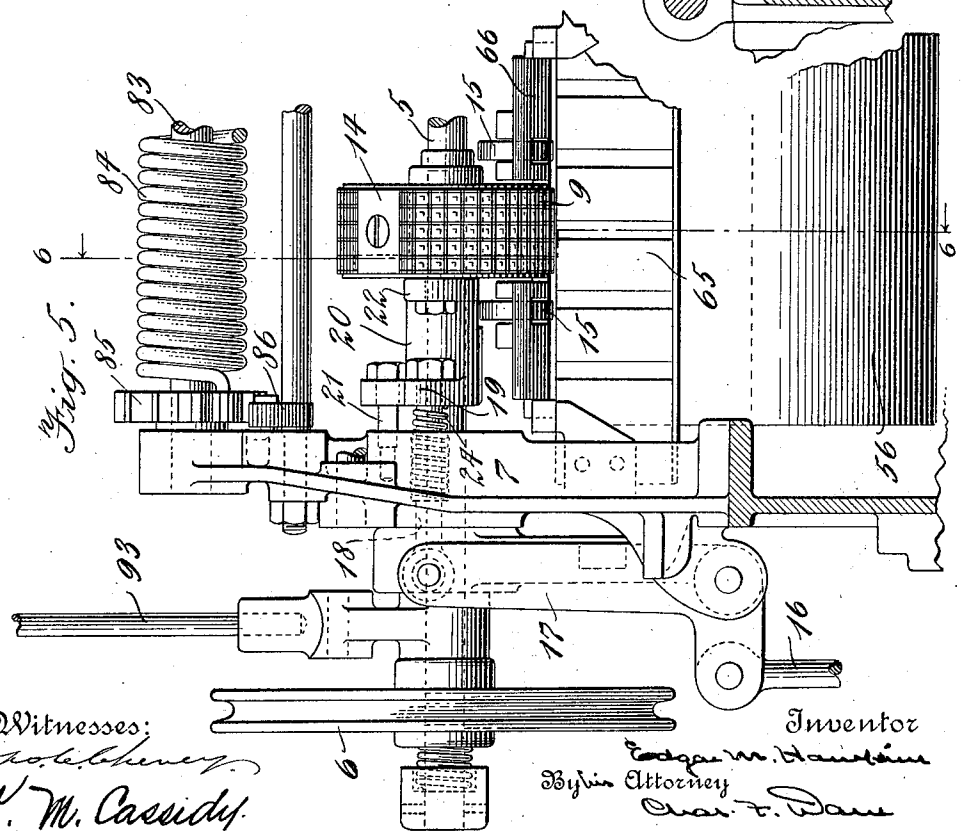


Fig. 5.



Witnesses:

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6 SHEETS—SHEET 6.

Fig. 8.

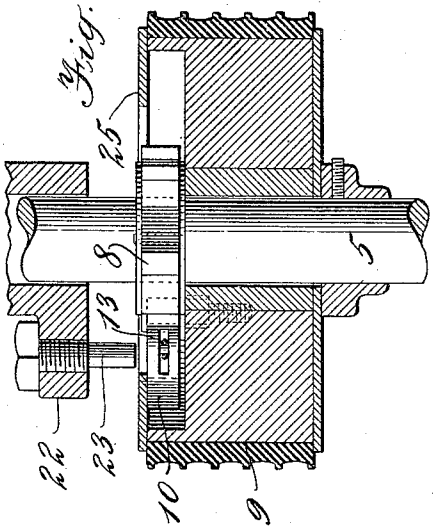
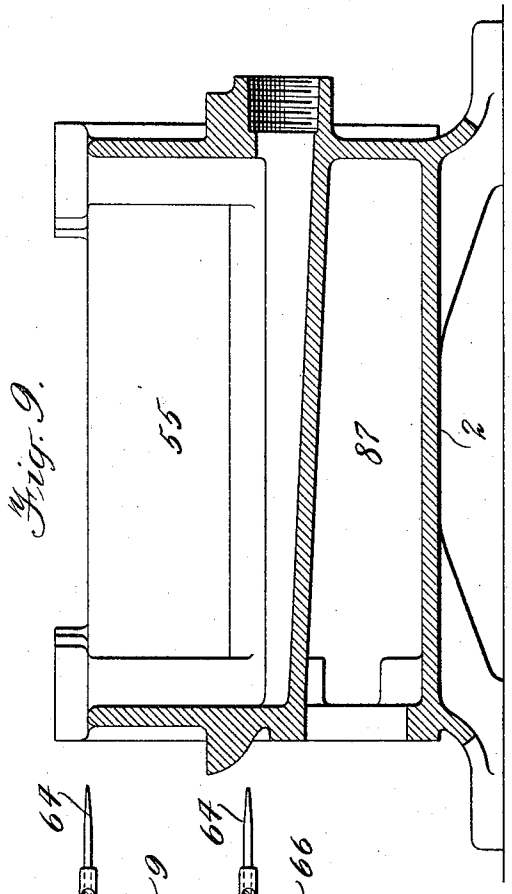


Fig. 9.



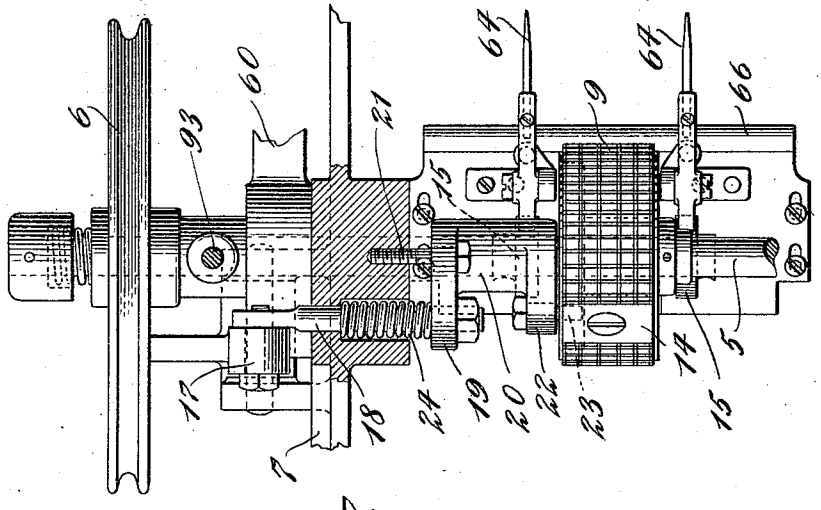


Fig. 7.

Witnesses:

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UNITED STATES PATENT OFFICE.

EDGAR MARVIN HAWKINS, OF ROCHESTER, NEW YORK, ASSIGNOR TO M. D. KNOWLTON COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

SHEET-COATING MACHINE.

1,133,024. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed July 29, 1911. Serial No. 641,246.

To all whom it may concern:

Be it known that I, EDGAR M. HAWKINS, citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Sheet-Coating Machines, of which the following is a specification.

This invention relates to a sheet coating machine, the main object of the invention being to provide a machine of this class by means of which sheets, such for example as labels, wrappers, etc., may be coated or gummed successively and automatically by power mechanism. A machine of this kind is useful mainly for gumming sheets to be applied one at a time to boxes or other articles, and the present invention is directed primarily to a machine adapted for use in this way. In practice such a machine should be capable of operation in such a manner as to deliver gummed sheets in a manner controllable by the operator who is to paste such sheets on boxes, etc., and an important feature of the invention is the provision of means under the control of the operator for affording an intermittent feed of sheets to the gumming means. This feed mechanism preferably has an intermittent feed movement controlled by automatic stopping means governed by the operator. An important feature of the mechanism is the provision of means for relieving or releasing the pressure of the feeding means on a sheet at a predetermined point in the operation of the mechanism and transferring feeding pressure to a suitable idler or idlers. In a machine of this type it is desirable to feed the sheets one at a time from a thick pile or bunch, and in order to accomplish this result in a practical manner it has been found necessary to provide special means for the purpose. The means employed herein preferably embodies two main parts, one of which coöperates with the feeding means for exerting feeding pressure on successive sheets of a bunch, whatever the thickness of the bunch or pile of sheets may be, while the other coöperates directly with such sheets for exerting holding pressure thereon, this holding pressure being preferably applied at the rear end of the bunch of sheets, while the feeding pressure is applied at the forward end thereof. An important feature of this holding means is that, in the preferred construction, only a small surface engages any sheet, needle points being employed which engage the rear end of the sheet and tear out a very narrow line or lines as the sheet is advanced by the feeding means. The position and character of these needle-pointed holding devices, however, are such that the sheet is not spoiled but is in condition for application to a box as soon as it has been coated or gummed. These and other features of the invention not hereinbefore referred to will be hereinafter described and claimed and are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a sheet coating machine, in a form particularly adapted for use as a label-gumming machine, and illustrates one embodiment of the invention, the parts being broken away to illustrate the construction clearly; Fig. 2 is a plan of the same; Fig. 3 is a rear elevation of the same; Fig. 4 is a substantially central vertical longitudinal section of the same, showing the positions of the parts when the feed-roll is stationary; Fig. 5 is an enlarged sectional rear elevation of a portion of the machine, illustrating particularly the feed-roll and the means for starting and stopping it; Fig. 6 is a vertical longitudinal section of the same, the section being taken in the line 6—6, Fig. 5, looking in the direction of the arrow, the feed-roll being shown in operative relation with the driving mechanism; Fig. 7 is a sectional plan of a portion of the same, the parts above the feed-roll being removed to illustrate the construction clearly; Fig. 8 is a sectional plan on a still larger scale of the feed-roll and the means for controlling the starting and stopping of the same, and Fig. 9 is a transverse section through the bed or base of the machine.

Similar reference characters designate like parts in all the figures of the drawings.

The various operative parts of the mechanism may be mounted upon any suitable frame, the preferred construction being that shown herein, in which the main frame comprises a casting, designated generally by 2, forming both a support for the moving parts of the machine and also means for con-

taining the glue or other adhesive to be applied to the sheets. In addition this base casting also has means for applying heat to the glue or other adhesive for the purpose of maintaining it in a proper liquid condition throughout the operation of the machine. Both at its forward end and at its rear end the body of this casting is shown as extended, the forward end being extended, as shown at 3, both for the purpose of supporting the forward operating parts of the machine and for the purpose of permitting a glue-trough or reservoir to extend sufficiently far forward, and the rear end having bracket extensions 4 for supporting operating parts of the mechainsm at the rear of the machine.

As before stated, the principal operating mechanisms of the machine are feeding means for feeding sheets successively to the gumming means, holding means for maintaining the sheets in proper position for engagement by the feeding means but so constructed as to permit the sheets to be fed readily at the proper times, and gumming means to which the sheets are delivered to be gummed.

The feeding means shown herein is power-operated and adapted to be brought into operation to feed sheets successively or intermittently, this action being under the control of an operator, who will usually be located at the forward end of the machine in position to remove sheets from the gumming means as fast as they are gummed. In this construction the speed of delivery of these sheets is also under the control of the operator. The feeding means is preferably driven from a suitable main shaft, such as 5, from which the gumming means will also preferably be operated. This shaft is shown as driven by a band-wheel 6, which may be connected with any suitable source of power (not shown) in any desired way, and is mounted in suitable bearings in side frames 7 rising from the main casting or bed near the longitudinal center of the machine. In the construction shown the shaft 5 has secured thereto substantially at the transverse center of the machine a ratchet-wheel 8 which is held against rotation on the shaft by means of a spline. The shaft 5 and its ratchet-wheel are intended to be continuously rotated by the band-wheel 6, and through them movement will be imparted in the present construction intermittently to a suitable feed member, such as a feed-roll 9. This feed-roll is also located substantially at the transverse center of the machine. Its surface is preferably covered with a suitable flexible material, such as rubber, for the purpose of gripping the sheets or labels firmly and positively feeding them through the machine to the gumming means. This feed-roll may be brought intermittently into engagement with or disengaged from the power mechanism just described for driving it by any suitable coupling means. That illustrated comprises a pawl 10 pivoted at 11 in the interior of the feed-roll and having a tooth 12 adapted to be projected into the path of and engaged by the teeth of the ratchet-wheel 8 for the purpose of coupling it to such ratchet-wheel and causing it to be rotated thereby. Normally this pawl 10 will be held, as by means of a spring 13, in position to be clutched by the ratchet-wheel, and hence the feed-roll will normally be clutched to the shaft 5 and rotated therewith.

The feed member shown is preferably so combined with means for holding a sheet in operative relation therewith as to be movable into and out of feeding relation with a sheet, the preferred construction being one in which a relatively thick pile or bunch of sheets is carried by a suitable sheet-holding means and in which the means for feeding sheets successively from such a pile or bunch is adapted to have the pressure exerted on it for feeding a sheet relieved or released at a predetermined point in the operation of the machine. In the preferred construction illustrated herein this relieving or releasing of feed pressure occurs intermittently and is due in part to the construction of the feed-roll and in part to means for receiving intermittently a part of the feed pressure borne by the feed-roll during the feed operation. The feed-roll shown is illustrated as having at 14 a flattened periphery movable in a path of less diameter than that in which the feeding portion of the periphery of the roll 9 travels, this flattened portion of the feed-roll being intended to be brought to the position shown in Fig 4 each time a sheet is fed forward far enough to bring it into proper coöperative relation with the gumming means. The means just referred to for receiving a portion of the feeding pressure will preferably come into action substantially at the moment that the effective portion of the periphery of the feed-roll reaches the inoperative position. The means employed may be any suitable for the purpose, one or more idlers or idler-rolls, such as 15, being shown herein and having their working surfaces, that is, the points intended to come in contact with a sheet, located or movable in a path lying between the paths of movement of the effective and flat portions respectively of the periphery of the feed-roll. By means of this construction it will be clear that normally the whole pressure exerted on a sheet to hold it in contact with the feed-roll will be exerted against the effective portion of the periphery of the feed-roll, but that when the parts are in the positions shown in Fig. 4 feed pressure will be transferred from the effective portion of

the surface of the feed-roll to the idler rolls 15. These rolls being small and light will oppose but slight resistance to the continued forward movement of the sheets by the gumming means, and the feed-roll though then in a stationary position will oppose no resistance to the sheets, in the preferred construction illustrated, because it will then be wholly out of contact with the sheet.

Any suitable means under the control of the operator may be employed for governing the starting and stopping of the feed-roll just described. That shown herein comprises a connecting-rod 16 usually operated by a treadle (not shown) and means operated thereby for controlling the coupling and uncoupling of the pawl and ratchet within the feed-roll. Here the connecting-rod 16 operates a shifting-lever 17 in the form of an angle-lever the long arm of which extends upward substantially vertically and is movable at its upper end through a short and nearly horizontal arc. At said upper end it is illustrated as pivotally connected to a slide or pin 18 secured at its inner end to a radial ear or lug 19 of a sleeve 20 mounted to slide freely on the shaft 5 while the shaft turns freely therein. This sleeve is also shown as held against rotation by the smooth shank of a screw 21 fastened to the adjacent side frame-piece 7, the sleeve being free to slide on the smooth shank of this screw as well as on the shaft 5. Said sleeve is also illustrated as having a second projecting ear or lug 22 having a pin 23 in fixed relation therewith for coöperation with the feed-roll, and particularly with the pawl 10 thereof. Normally a coiled spring, such as 24, in an enlargement of the bore in which the pin or slide 18 works, tends to force the sleeve 20 and consequently the pin 23 inward and into the plane of rotation of the feed-roll. It will be noticed that this feed-roll is open at the end adjacent to the pin 23, it having in the construction illustrated an annular end-plate 25 with a large central opening. The major portion of the inner edge of the pawl 10, when that pawl is out of action, is also preferably defined by the same circle that defines the opening in the end-plate 25. Moreover, the pin 23 is so located as to lie just within this circle, and it is movable into and out of said opening in a path lying just within said circle, as clearly shown in Fig. 6. It is therefore out of the path of all of the operating parts except those portions of the pawl 10 with which it is intended to coöperate. It will be noticed that the pawl 10 has a slight rise or projection at 26 followed by a depression or locking-notch 27 which in this case is immediately adjacent to the tooth of the pawl. Normally when the foot of the operator is released from the operating treadle (not shown) the spring 24 will force the uncoupling pin 23 into the opening in the end of the feed-roll, and as said feed-roll turns the inner edge of the end-plate 25 will pass around said pin without interference until the pawl 10 comes into position for operation, when said pawl will strike said pin and will be forced out thereby toward the periphery of the feed-roll from the position shown in Fig. 6 to that illustrated in Fig. 4, said pin riding over the projection 26 and into the locking recess 27, when the pawl reaches the proper point in its travel. The projection 26 prevents backlash and assures the locking of the feed-roll in a predetermined position, which is that shown in Fig. 4, with the flat face of the feed-roll out of contact with a sheet.

It will be noticed that the feed-roll is very light and of substantially skeleton construction, this being an important feature of the apparatus, as it is desirable to reduce the weight and momentum of the rapidly rotated and quickly checked feed-roll to the minimum. By means of the devices just described the feed-roll can be stopped substantially instantaneously and locked in the exact predetermined position without affecting the operation of the main driving shaft 5 or the operation of other parts controlled by such shaft. It will be seen that the controlling devices for coupling and uncoupling the feed-roll are such that the putting of the feed-roll into action requires positive action on the part of the operator, the normal condition of the parts being that in which the feed-roll is out of operative relation with the shaft 5. In connection with the devices just described for feeding sheets successively to the gumming means suitable sheet-holding means will be employed. Preferably a sheet-holder adapted to carry a thick pile or bunch of sheets is used and is of such construction as to be capable of gradual movement toward the feed-roll as the thickness of the pile or bunch is reduced by the withdrawal of sheets successively therefrom. In connection with such a sheet-holder means are also preferably employed for exerting feed pressure upon it and upon the sheet being fed.

The sheet-holder illustrated is designated generally by 30 and is pivoted at 31 in bearings at the upper rear ends of the brackets 4. At its forward end it has a range or arc of movement sufficient to accommodate a pile of sheets of the desired thickness, say one or two inches; and in connection with this sheet-holder suitable means are provided for exerting feed pressure upon it constantly for holding the outer or upper sheet in position to be fed. This feed pressure will be exerted against the circular periphery of the feed-roll when the flat portion of said roll is not adjacent to the uppermost sheet, but when the circular portion of the feed-roll begins

to leave the sheet the forward end of the sheet-holder and the pile of sheets thereon will rise slightly and feed pressure will be transferred from the circular periphery of the feed-roll to the idler rolls 15 before described. Any suitable means will be employed for exerting this feed pressure on the sheet-holder. That shown herein comprises a counterweighted lever 32, here illustrated as a cam-lever, this lever being fastened to the rock-shaft 33 mounted in suitable bearings on the framework and having a cam-arm 34 on which the sheet-holder 30 rests. The feed-pressure exerted by this counterweighted lever may be varied as desired by means of the adjustable weight 35 mounted to slide on the long arm of the lever and to be held in any desired adjusted position thereon. This cam-lever is swung up to the position shown in dotted lines in Fig. 1 whenever a bunch of sheets is to be placed on the sheet-holder, this being necessary in order to permit said sheet-holder to be lowered sufficiently for this purpose. Coacting stops are illustrated at 36 and 37 on the cam-lever and the framework respectively for limiting this upward movement of the cam-lever. By means of the devices just described a predetermined and substantially uniform feed pressure may be applied to each of the sheets of a bunch placed on the sheet-holder, and by the adjustment of the weight 35 the amount of that pressure may be regulated in accordance with the character and material of the sheets being fed.

In addition to the devices just described for exerting pressure on the sheet-holder and sheets to bring the sheets into proper feed relation with the feed-rolls, suitable means should be employed for exerting opposing pressure on the sheets to keep them in proper position for feeding and assure their being fed from the pile one at a time only. This opposing pressure will usually be exerted downwardly by suitable means for holding the sheets at a point in the rear of that at which they are engaged by the feeding means, the preferred construction being that illustrated herein, in which the feeding pressure is exerted upwardly at the forward end of the sheet to the opposing holding pressure exerted downwardly substantially at the extreme rear end of each sheet. The holding means employed is designated generally by H. It comprises suitable means for exerting pressure on a small area or areas only of the sheet, the construction found best for the purpose being one in which needle-pointed holding devices are used, the needle point or points being so set as to engage the sheet very close to the rear end thereof—say within one-eighth or three-sixteenths of an inch of the rear edge. When so held each sheet when drawn forward by the feeding means will have a short, fine slit cut in it by the needle-point of each holding device, which slit is so narrow as to do no harm, as it will not be noticed when the sheet is pasted or applied on a box or other article. The needle-pointed holding means just described will preferably exert a constant pressure on the upper rear end of the pile of sheets. The position of the holding means lengthwise of the line of travel of the sheets may be varied at will in the preferred construction in order that it may coöperate properly with sheets of various lengths. The construction shown is one in which two needle-points 38 are held in chucks 39 mounted in sleeves 40 adjustable in vertical bearings 41 in a cross-head 42 mounted to slide on a pair of slide-rods 43 forming parts of a pivoted frame or needle carriage the pivot point of which is in a rock-shaft 44 mounted in suitable bearings on the framework and having stops 45 coöperative with fixed stop faces 46 on the framework for limiting the upward movement of said frame about its axis in the rock-shaft 44. At its rear end the rods 43 preferably rest in half-bearings 47 rising, as before described, from the rear bracket-arms 4. Suitable means, such as the clamp-screws 48, may be employed for securing the cross-head 42 and the parts carried thereby in any desired position lengthwise of the needle-carriage. The needle-pointed holding devices just described as mounted in the vertical bearings 41 of the cross-head 42 are preferably so supported that they may be raised and held in an elevated position whenever it becomes necessary to refill the sheet-holder. When refilling is necessary they are intended to be raised by grasping their weighted heads 49 and turning them a slight distance, say about 90°, bayonet-slots being shown at 50 in the sleeves 40 for this purpose. When so raised and turned these needle-pointed holding devices may be held positively in this elevated position by means of stops such as are shown at 51 (see particularly Figs. 3 and 4). By raising and holding them in this manner these needles are prevented from falling on and injuring the fingers of the operator or the sheets. In connection with these devices strips of soft wood, such as 52, are preferably provided in the sheet-holder or table under the needles so that when the last sheet is pierced by the needles the points of the needles will not impinge against the metal surface but will be protected by the soft wood. Suitable guides, such as 53, should of course be employed at opposite sides of a bunch of sheets for locating the sheets sidewise. These guides or gages may be of any suitable type and adjusted in any well known manner (see Fig. 2).

For the purpose of stopping the machine entirely and starting it again should it become necessary to do so, a hand-lever is illus-

trated at 93, this hand-lever serving to clutch the band-wheel 6 or to disengage it from the shaft 5 in a manner well understood. In the ordinary operation of the machine, however, this hand-lever will not be used as the shaft 5 will be continuously rotated, as before described. A hand-wheel 94 is shown at the opposite end of the shaft 5 from the hand-lever 93 for the purpose of turning said shaft, the use of which will be obvious.

What I claim is:—

1. In a machine of the character described, the combination of power-operated means for feeding a sheet to the machine, actuating means for said feeding means, means for exerting feed pressure between said feeding means and a sheet to be fed to the machine, an idler device, means to transfer the feed pressure from said feeding means to the idler device, and mechanical stopping means automatically operative when the pressure is thus transferred to disconnect the actuating means from said feeding means.

2. In a machine of the character described, the combination of a power-operated feed device having a portion of its feed surface movable in a path that does not intersect the path of travel of the sheet being fed, means for exerting feed pressure between said feed device and the sheet to be fed, an idler device to which the feed pressure is transferred when said portion of the feed device is adjacent the sheet, actuating means for said feed device, and automatically operable means for disconnecting the actuating means from said feed device and stopping the latter when the pressure is thus transferred to the idler device.

3. In a machine of the character described, a power-operated feed roll having a portion of its periphery movable in an arc that does not intersect the path of travel of the sheet being fed, means for exerting feed pressure between said feed roll and the sheet to be fed, an idler device to which the feed pressure is transferred when said portion of the feed roll is adjacent the sheet, actuating means for said feed roll, and means for automatically disconnecting the actuating means from said feed roll and stopping the latter when the pressure is thus transferred to the idler device.

4. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, pressure means for exerting feed pressure between the feed device and a sheet on said sheet-holder, an idler roll normally stationary with respect to the feed device, and means for transferring feed pressure from the feed device to said idler roll at a predetermined point in the feed of the sheet.

5. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll for feeding a sheet to the machine, pressure means for exerting pressure between the feed-roll and a sheet carried by said sheet-holder, an idler roll, normally stationary with respect to the feed roll, and means for transferring feed pressure from the feed-roll to said idler-roll at a predetermined point in the feed of the sheet.

6. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll for feeding a sheet to the machine, pressure means for exerting pressure between the feed-roll and a sheet on said sheet-holder, an idler roll, normally stationary with respect to the feed roll, and means for transferring feed pressure from the feed-roll to said idler roll when the sheet reaches the machine.

7. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll for feeding a sheet to the machine, pressure means for exerting pressure between the feed-roll and a sheet carried by said sheet-holder, a pair of idler rolls at opposite sides of the feed-roll, and normally stationary with respect to the feed roll, and means for transferring feed pressure from the feed-roll to said idler rolls at a predetermined point in the feed of the sheet.

8. In a machine of the character described, the combination with a sheet-holder, of a feed roll having a periphery, one part of which is operative for feeding a sheet to the machine and another part of which is ineffective for feeding a sheet, pressure means for exerting pressure between the feed roll and a sheet carried by said sheet-holder, means adapted to permit free feeding of the sheet when the ineffective part of the feed roll is adjacent the sheet and to which the pressure is transferred at such time, actuating means for turning said feed roll to its ineffective position, and stopping means automatically operable when the feed roll reaches its ineffective position for disconnecting the actuating means from the feed roll.

9. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll having a periphery one part of which is operative for feeding a sheet to the machine and another part of which is of less diameter and is ineffective for feeding a sheet, pressure means for exerting pressure between the feed-roll, and a sheet carried by said sheet-holder, an idler or pressure-receiving roll normally stationary with respect to the feed roll, and means for turning said feed-roll to its ineffective position to transfer feed pressure from the feed-roll to said idler roll.

10. In a machine of the character de-

scribed, the combination with a sheet-holder, of a power-operated feed-roll having a periphery one part of which is operative for feeding a sheet to the machine and another part of which is of less diameter and is ineffective for feeding a sheet, pressure means for exerting pressure between the feed-roll and a sheet carried by said sheet-holder, an idler roll the periphery of which is movable in a path between said effective and ineffective portions of the feed-roll, and means for turning said feed-roll to its inoperative position to transfer feed pressure from the feed-roll to said idler roll.

11. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll having a periphery one part of which is operative for feeding a sheet to the machine and another part of which is of less diameter and is ineffective for feeding a sheet, pressure means for exerting pressure between the feed-roll and a sheet carried by said sheet-holder, a pair of idler rolls the periphery of each of which is movable in a path between the effective and ineffective portions of the feed-roll, said idler rolls being disposed at opposite sides of the feed-roll, and means for turning said feed-roll to its ineffective position to transfer feed pressure from the feed-roll to said idler rolls.

12. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, means constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with the feeding device, a pressure-receiving idler roll normally stationary with respect to the feed device, and means for transferring pressure of said sheet-holder from the feed device to the pressure-receiving roll at a predetermined point in the feed of the sheet.

13. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll for feeding a sheet to the machine, means constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with the feed-roll, an idler or pressure-receiving roll normally stationary with respect to said feed roll, and means for transferring pressure of said sheet-holder from the feed-roll to the pressure-receiving roll at a predetermined point in the feed of the sheet.

14. In a machine of the character described, the combination with a sheet-holder, of a feed device for feeding a sheet to the machine, pressure means for exerting pressure between the feed device and a sheet carried by said sheet-holder, a pressure-receiving idler roll normally stationary with respect to the feed device, and means for moving said feed device and transferring feed pressure from it to said pressure-receiving roll at a predetermined point in the feed of the sheet.

15. In a machine of the character described, the combination with a sheet-holder, of a feed roll for feeding a sheet to the machine, pressure means for exerting pressure between the feed roll and a sheet carried by said sheet holder, a pressure-receiving idler roll normally stationary with respect to said feed roll, and means for turning said feed roll and transferring feed pressure from it to said pressure-receiving roll at a predetermined point in the feed of the sheet.

16. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, means constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with the feeding device, an idler roll normally stationary with respect to said feed device, and means for transferring pressure of said sheet-holder from the feed device to the idler roll and from the idler roll to the feed device.

17. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, means constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with the feeding device, an idler roll normally stationary with respect to the feed device, and intermittently operative means for transferring pressure of said sheet-holder from the feed device to the idler roll and from the idler roll to the feed device alternately.

18. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed-roll for feeding a sheet to the machine, means constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with the feed-roll, an idler roll normally stationary with respect to said feed roll, and intermittently operative means for transferring pressure of said sheet-holder from the feed-roll to the idler roll and from the idler roll to the feed-roll alternately.

19. In a machine of the character described, the combination with a substantially horizontal pivoted sheet-holder adapted to supply sheets successively from a bunch of sheets and having an arc of movement corresponding substantially to the thickness of said bunch, of a power-operated feed-roll located above said sheet-holder and having a periphery one part of which is operative for feeding a sheet to the machine and another part of which is of less diameter and is ineffective for feeding a sheet, an idler roll in position to be engaged by the sheet-holder in the inoperative position of the feed-roll and a counter-

weight constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with said feed-roll or with the idler roll according to the position of the feed-roll.

20. In a machine of the character described, the combination with a substantially horizontal pivoted sheet-holder adapted to supply sheets successively from a bunch of sheets and having an arc of movement corresponding substantially to the thickness of said bunch, of a power-operated feed-roll located above said sheet-holder and having a periphery one part of which is operative for feeding a sheet to the gumming means and another part of which is of less diameter and is ineffective for feeding a sheet, an idler roll normally stationary with respect to said feed roll in position to be engaged by the sheet-holder in the inoperative position of the feed-roll, and an adjustable counter-weight constantly tending to exert pressure on said sheet-holder to bring a sheet into contact with said feed-roll or with the idler roll according to the position of the feed-roll.

21. In a machine of the character described the combination of power-operated feeding means for feeding a sheet to the machine, means for exerting feed pressure between the feeding means and the sheet to be fed, actuating means for said feeding means, automatic means for relieving the pressure of said feeding means on the sheet at a predetermined point in the feed movement of the sheet, said automatic means adapted to permit free feeding of the sheet when the pressure is thus relieved and to which the feed pressure is transferred at such time, and mechanical means automatically operable when the pressure of the feeding means on the sheet is thus relieved for disconnecting the actuating means from the feeding means.

22. In a machine of the character described, the combination with a sheet-holder adapted to supply sheets successively from a bunch of sheets, of means for feeding said sheets successively to the machine, a pivoted slide-rod located above said bunch of sheets, a slide mounted on said slide-rod and movable along it to different positions, and a weighted holding device slidable up and down in said slide for engaging and maintaining a predetermined pressure on each of said sheets until it is engaged by said feeding means.

23. In a machine of the character described, the combination with a sheet-holder adapted to supply sheets successively from a bunch of sheets, of means for feeding said sheets successively to the machine, a pivoted slide-rod located above said bunch of sheets, a slide mounted on said slide-rod and movable along it to different positions, and a weighted pointed holding device slidable up and down in said slide for engaging and maintaining a predetermined pressure on each of said sheets until it is engaged by said feeding means.

24. In a machine of the character described, the combination with a sheet-holder pivotally mounted to swing about a fixed axis and movable toward and from a feed device, of a power-operated feed device located above said sheet-holder for feeding a sheet to the machine, means mounted to swing about an axis independent of said first-named axis and constantly tending to exert upward pressure on said sheet-holder to bring a sheet into contact with the feed device, means for varying said pressure, and holding means for exerting downward pressure on said sheet.

25. In a machine of the character described, the combination with a sheet-holder pivotally mounted to swing about a fixed axis and movable toward and from a feed device, of a power-operated feed device located above said sheet-holder for feeding a sheet to the machine, an adjustable counterweight mounted to swing about an axis independent of said first-named axis and constantly tending to exert upward pressure on said sheet-holder and bring a sheet into contact with the feed device, and holding means for exerting downward pressure on said sheet.

26. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, actuating means for said device, pressure means for exerting feed pressure between the feed device and a sheet on said sheet-holder, an idler device, means for transferring feed pressure from the feed device to said idler device at a predetermined point in the feed of the sheet, and means for disconnecting the actuating means from the feed device when the pressure is thus transferred.

27. In a machine of the character described, the combination with a sheet-holder, of a power-operated feed device for feeding a sheet to the machine, actuating means for said device, pressure means for exerting feed pressure between the feed device and a sheet on said sheet-holder, an idler roll, means for transferring feed pressure from the feed device to said idler roll at a predetermined point in the feed of the sheet, and means for disconnecting the actuating means from the feed device when the pressure is thus transferred.

28. In a machine of the character described, the combination with a sheet holder, of a power-operated feed roll for feeding a sheet to the machine, actuating means for said feed roll, pressure means for exerting feed pressure between the feed roll and a

sheet on said sheet-holder, an idler roll, and means for transferring feed pressure from the feed roll to said idler roll at a predetermined point in the feed of the sheet, and means for disconnecting the actuating means from the feed roll when the pressure is thus transferred.

Signed at Rochester, in the county of Monroe, and State of New York, this 26th day of July, A. D. 1911.

EDGAR MARVIN HAWKINS.

Witnesses:

H. W. SPEARES,

THOS. D. PATTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."