

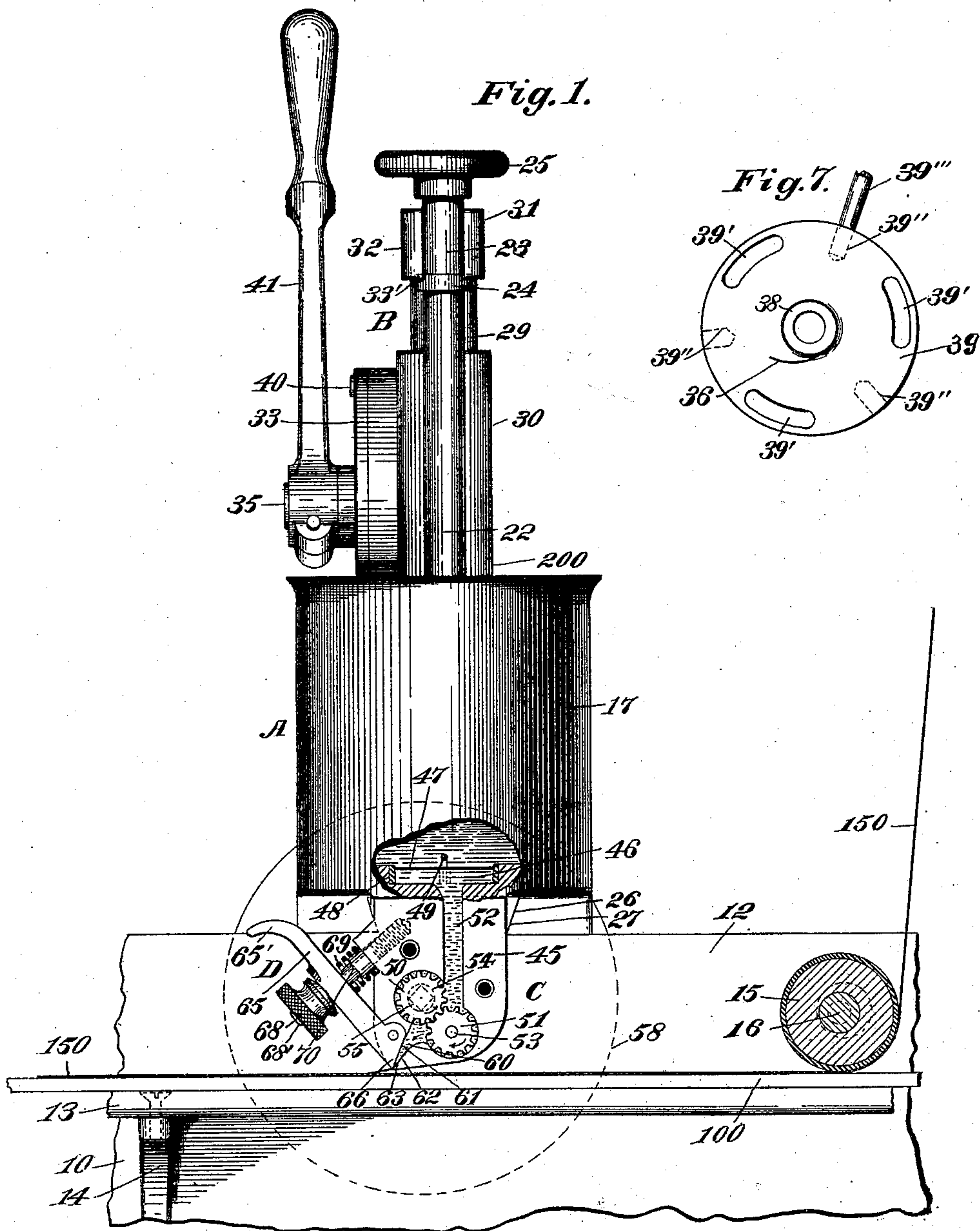
(No Model.)

3 Sheets—Sheet 1.

F. H. RICHARDS.
MACHINE FOR APPLYING PASTE.

No. 572,373.

Patented Dec. 1, 1896.



Witnesses:
R. W. Pittman
Fred. J. Dole.

Inventor:
F. H. Richards.

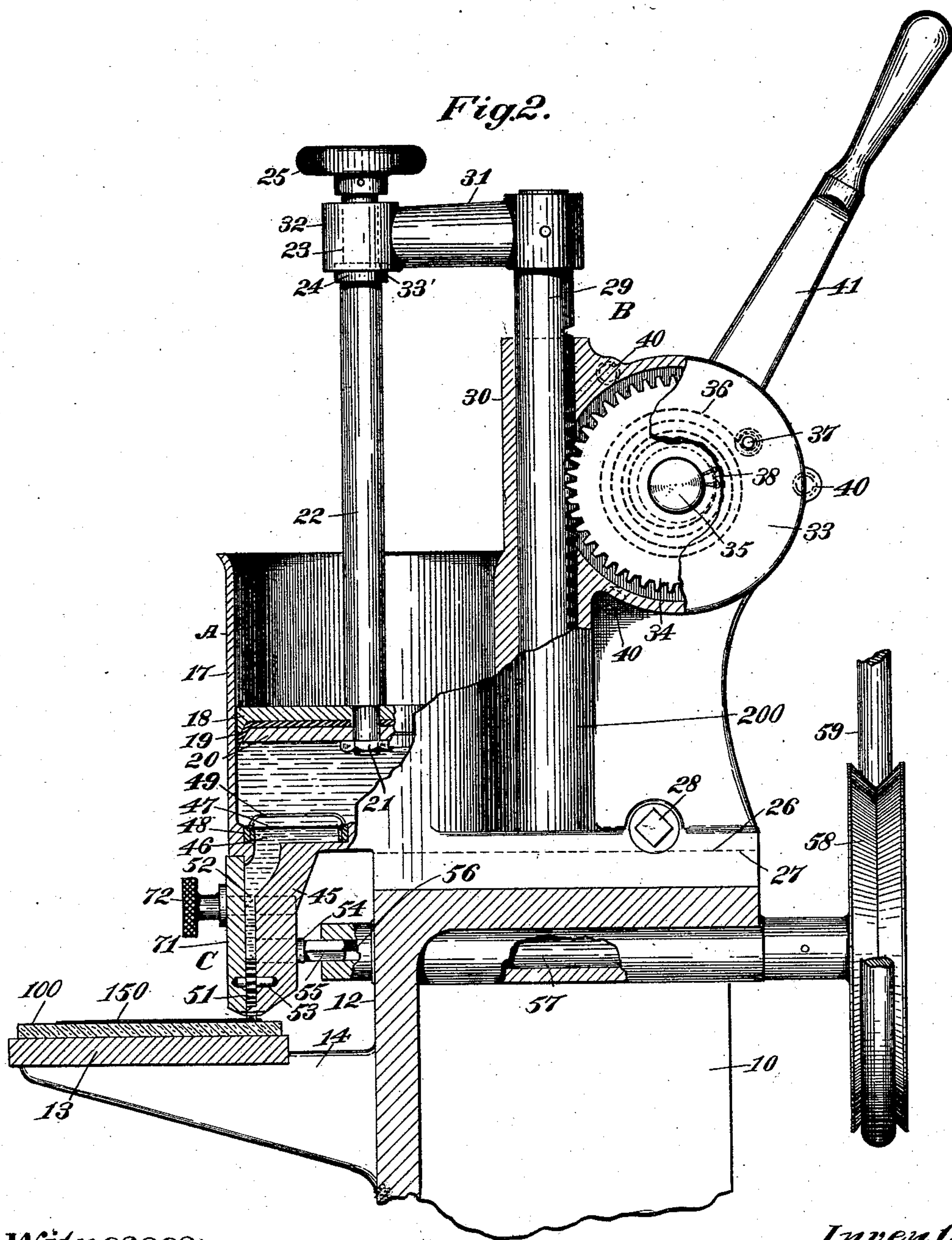
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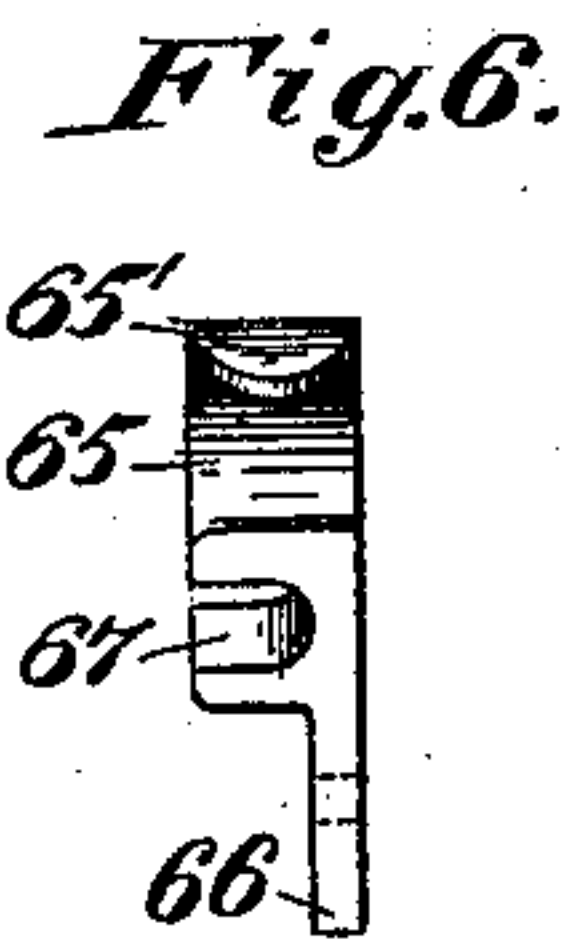
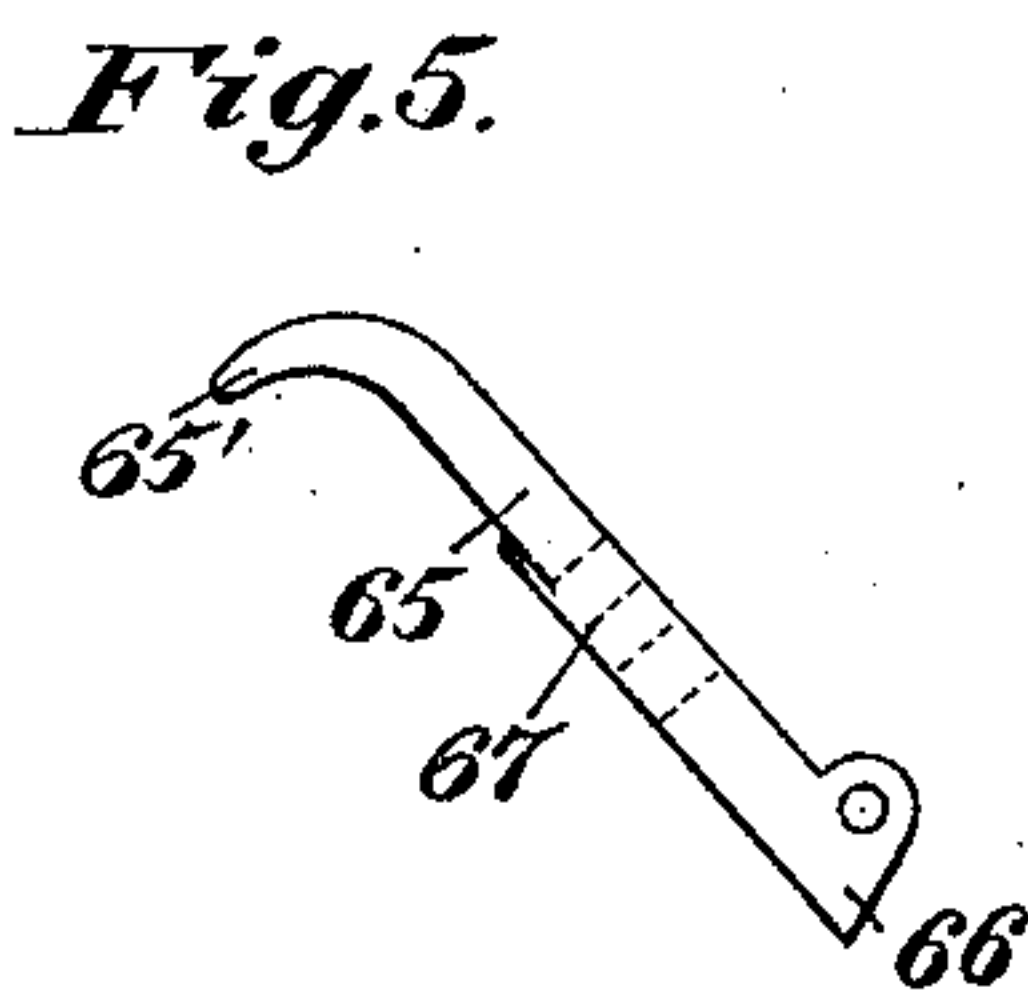
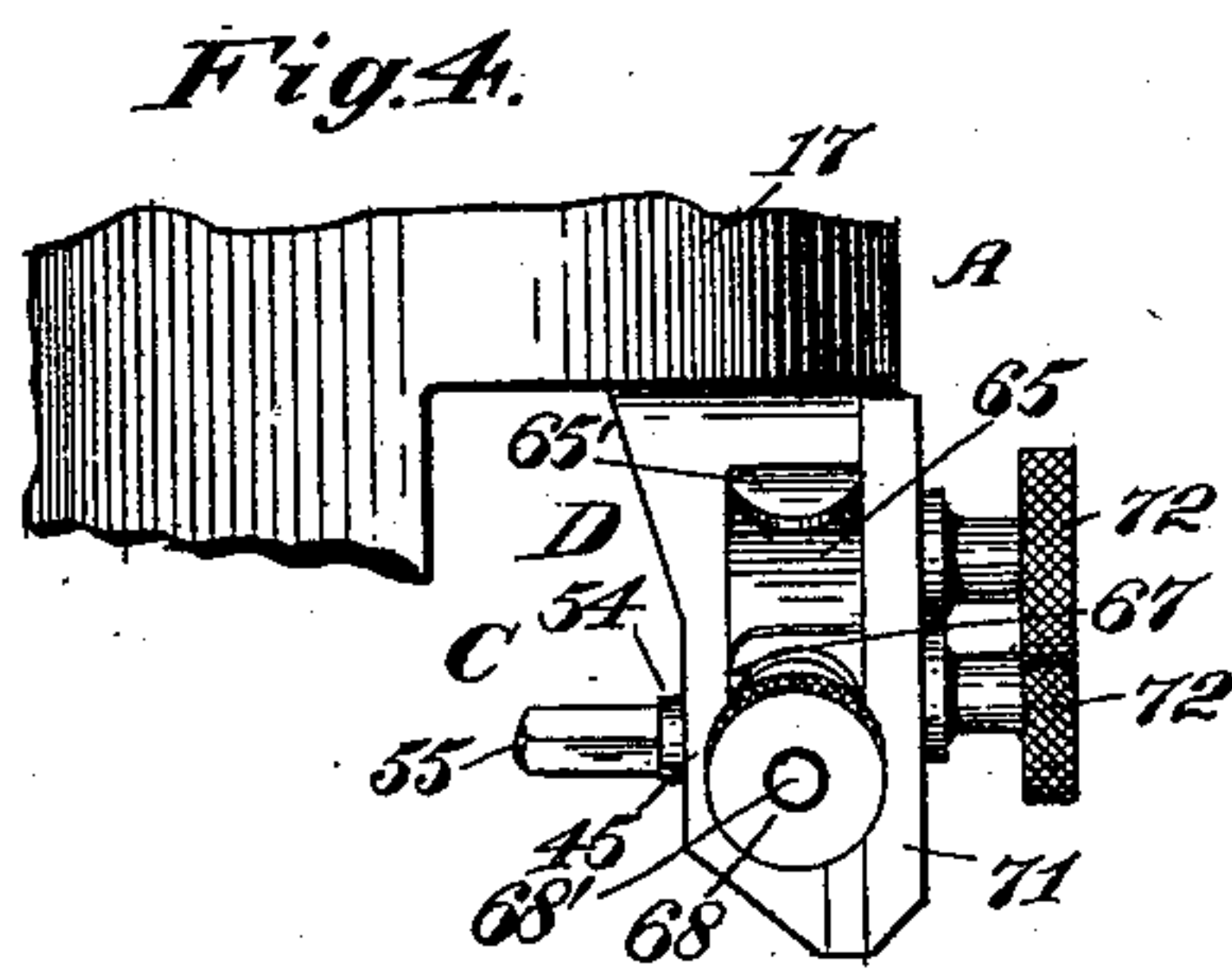
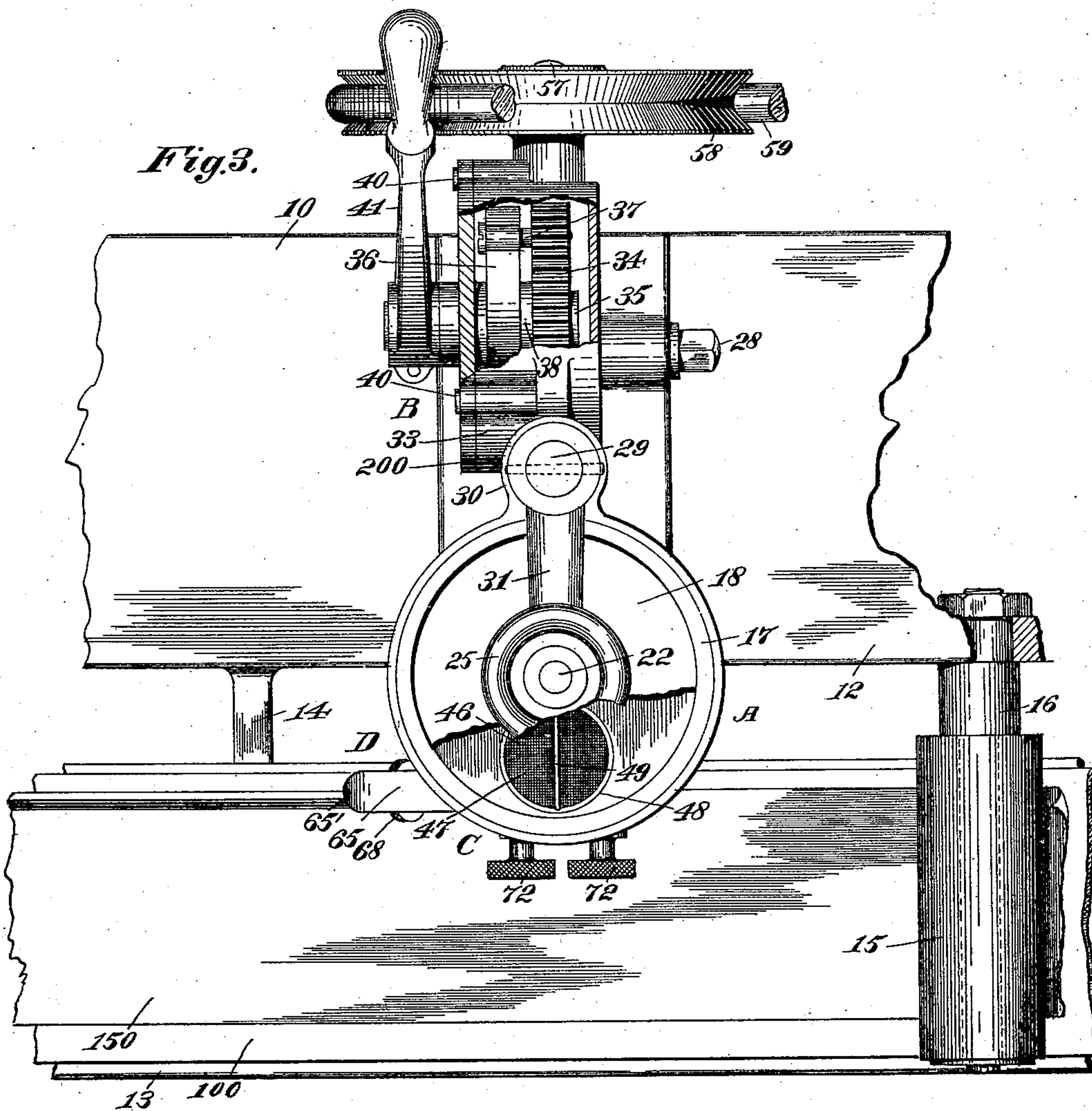
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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

MACHINE FOR APPLYING PASTE.

SPECIFICATION forming part of Letters Patent No. 572,373, dated December 1, 1896.

Application filed April 23, 1896. Serial No. 588,790. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Applying Paste, of which the following is a specification.

This invention relates to improved means for supplying or forcing a stream of paste or analogous composition or a stream of fluid of like characteristics into position for use, and is more particularly designated as a "paste-supply" apparatus; and the object of the invention is to provide an apparatus of this character, embodying therein feeding mechanism in the nature of a force-feed device or pump disposed in position at the delivery side of the outlet of the paste-reservoir, whereby the paste or other composition can be continuously and uninterruptedly forced into the desired position; and a further object of the invention is to provide an apparatus which is simple in construction and effective in operation and capable of being quickly and easily assembled and disassembled, and in which the supply of the composition can be regulated to permit a larger or smaller stream to be obtained.

In the drawings accompanying and forming part of this specification, Figure 1 is a front view of this improved apparatus, shown partly broken away, and illustrating the same disposed in position on a portion of a framework of the machine, and also showing a web of suitable material, such as paper, in position to be supplied with paste. Fig. 2 is a side view thereof, looking toward the left hand, partly in section and partly broken away, more clearly to illustrate the apparatus. Fig. 3 is a top view thereof, partly broken away. Fig. 4 is a side view of the lower part of the paste-reservoir, showing the stream-regulating device in position thereon. Fig. 5 is a side view of the regulating device or lever, and Fig. 6 is a rear view thereof. Fig. 7 is a view of a detail hereinafter described.

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

This improved paste-supply apparatus will in practice be preferably disposed in position adjacent to the particular character of ma-

chine with which it is to be used, and it is therefore herein shown disposed in a part of the framework of a machine carrying a suitable web of paper 150, to which the composition is to be applied; but it will be understood, however, that the apparatus may be secured in position on any suitable support and be used to supply the composition to any desired material to which such composition is applicable; and the apparatus comprises, in a general way, a reservoir, (designated generally by A,) means (designated in a general way by B) for holding the paste under pressure, means in the nature of a force-feed device or pump (designated in a general way by C) for supplying or feeding the paste to the material, and means (designated in a general way by D) for regulating the supply to permit a large or small stream to be obtained.

This improved apparatus is herein shown supported upon a portion of the framework 10 of the machine, as before stated, which framework comprises the fixture 12 and the endless conveyer or belt carrying table 13, secured thereto by suitable arms or brackets 14, and which table is herein shown slightly below the plane of the supporting-surface of such fixture 12.

Disposed on the table is suitable means for guiding or pressing the web 150 on the endless belt 100, which belt may be carried by any means, and which guiding means is herein shown as a pressure-roller 15, preferably incased in rubber and eccentrically journaled on a suitable shaft 16, extending from the fixture 12 and adjustable by means of a nut or other device, whereby the pressure of said roll can be regulated.

The paste-supply apparatus, in the preferred form thereof herein shown and described, comprises a reservoir A, supported on the fixture 12, and which reservoir is in the nature of a tank 17, adapted to contain the paste.

The means herein shown for maintaining the paste under pressure comprises a suitable piston 18, disposed in the tank and provided with the usual packing 19, preferably cup-shaped and secured thereto by a suitable clamp-plate 20 and nut 21. The piston is provided with a piston-rod 22, preferably of slightly-smaller diameter adjacent to its up-

per end than the main portion of said piston, thereby forming a neck 23, and said rod is also provided with an annular flange or collar 24 for the purpose hereinafter set forth and with a suitable handle or hand-wheel 25 above said neck. The preferred means for holding this piston in engagement with the paste, and thereby maintaining a constant tendency of the composition to flow from the tank, comprises a spring-actuated gear mechanism operatively connected with the piston and supported adjacent to the tank by any preferred means, and in the construction of apparatus shown this supporting means is illustrated integrally connected with the tank, whereby the tank and supporting means may, if desired, comprise one structure (shown in the nature of a casting 200) removably and adjustably supported in position, although it will be evident that this is not necessary, as the tank and gear mechanism may be removably disposed on the fixture 12 in any other suitable way for adjustment. In this construction, however, the fixture 12 is provided with a dovetail way 26 and the casting with a dovetailed channel or groove 27, fitting said way, the casting being secured thereon, when adjusted, by means of the clamp-screw 28.

The spring-actuated gear mechanism comprises in its preferred form a rack slide or bar 29, sliding in a suitable way 30 of the casting 200 and located in parallelism with the piston-rod 22. This rack-slide has an arm 31 at its upper end, carrying a bifurcated sleeve 32, having a countersunk portion or annular recess 33', in the bifurcation of which sleeve the neck 23 of the piston-rod is received.

As a means for actuating the rack-bar and also holding the piston in engagement with the paste a gear-wheel 34 is disposed on the casting and is preferably carried within a closed casing 35 and fixedly secured on a shaft or stud 35, journaled in a hub 38, carried by one of the walls of said casing, and which gear-wheel has its teeth in mesh with the teeth of the rack-slide 29.

As a means for pressing the rack-slide downward by means of the gear a spring 36 is preferably carried by and has one end thereof fixedly secured to said hub, the opposite end thereof being secured to the gear by a pin or screw 37 or other suitable fastening device.

In this construction that wall of the casing which carries the hub of the gear-wheel is constructed to form a removable cap 39, secured to the casing by means of suitable screws 40 or other fastening devices. By turning the cap, and thereby the hub with the spring fastened thereto, before the insertion of the fastening devices said spring will be placed under the desired tension. It will be obvious, however, that the cap may be provided with suitable elongated openings 39', through which the fastening devices 40 pass, whereby said cap can be readily turned by

loosening the fastening devices instead of removing the same, as heretofore described. A cap provided with such openings 39' is shown in Fig. 7, and said cap may be furnished with a recess or recesses 39'' for receiving a suitable lever 39''', by which it may be turned to adjust the tension of the spring, the bolts 40 being, of course, tightened when the desired adjustment shall have been obtained. Any other suitable device may be substituted for the spring as a means for forcing the piston downward under yielding pressure, if deemed desirable.

Secured to the outer end of the shaft 35 is a suitable handle, preferably in the nature of a lever 41, whereby the gear-wheel can be actuated to move the rack upward, to thereby withdraw the piston from the reservoir or to release the pressure of the same on the paste. When the rack-slide is forced downward by the action of the spring and gear-wheel, the countersunk or recessed part 33' of the bifurcated sleeve engages the collar or flange 24 of the piston-rod 22, and thereby prevents the said rod from moving out of its proper position.

The reservoir or tank is provided at its lower portion with any suitable means for carrying the conduits and feed and regulating devices hereinafter described—such, for instance, as an extending apron or bracket 45, preferably integral with said tank, although it may be removably secured thereto, if desired—and said tank is also provided with a paste-outlet 46 at the bottom thereof, opening at the upper end of the bracket or apron 45 and communicating with and practically forming a part of a conduit or channel 52, formed in the bracket, and which conduit 52 leads to the paste-feeding mechanism hereinafter specified.

A suitable sieve or strainer 47 is disposed in position in the bottom of the tank to extend over the paste-outlet 46, and for which purpose the tank is provided with an annular recess 48, in which the rim of the strainer fits. This strainer or sieve is provided with a handle 49, whereby it can be quickly and easily withdrawn when the piston is removed. By means of this strainer the clogging or choking of the outlet and the conduits (hereinafter specified) by lumps or foreign matter in the composition is prevented.

In order to supply or force the paste or composition to the web of paper or other material, suitable feeding mechanism is provided in the nature of a force-feed mechanism, device, or pump disposed in any desired position adjacent to the delivery side of the reservoir-outlet 46, whereby the composition will be regularly and continuously forced into the desired position, and while this force-feed device may comprise any suitable means or mechanism disposed adjacent to such reservoir-outlet and adapted to accomplish the purpose desired it is shown in this construction in its preferred form as a rotary force-feed

mechanism or pump preferably consisting of a pair of intermeshing gears 50 and 51, disposed in a countersunk or recessed part of the bracket or apron and preferably adjacent to the lower end thereof, and one of which gears is disposed to intersect the conduit or channel 52. One of these gears, preferably the lower one, as 51, is carried by a suitable stud 53, journaled in the bracket or apron 45 and also in a removable cap, (hereinafter described,) while the other gear, as 50, is fixedly secured to a shaft 54, journaled in the bracket or apron 45, and which shaft is in this construction shown extending in the rear of the table 13, and is provided with a squared or polygonally-shaped end 55, adapted to enter a similarly-shaped socket or recess 56 in the end of a rotary driving-shaft 57, journaled in the fixture, and which shaft carries at the opposite end thereof a suitable power-transmitting or driving wheel or pulley 58, (shown adapted to receive a belt 59, leading to any desired source of power, although it may be driven in any well-known way,) whereby said shaft is rotated, and thereby the gears, to force the paste regularly and continuously to the web of paper or other material on the table.

In communication with and practically constituting a continuation of the channel or conduit 52, by means of the recess in which the gear 51 rotates, is a second conduit or feed-channel 60, leading into position above the web of material on the table, and which conduit is formed by a recess 61 on the apron or bracket 45, one wall of which recess, as 62, constitutes a fixed lip 63, another lip being formed by the regulating means about to be described.

As a means for regulating the supply of paste to the material and to thereby permit a larger or smaller stream to be forced into position for use a regulating device is provided, which, in its preferred form, comprises a lever 65, mounted to have its lower end constitute the other or movable lip 66 of the mouth or nozzle of the conduit or channel 60, and this lever is herein shown pivoted adjacent to one end in the recess 62 of the bracket or apron, although it may be otherwise arranged, and is provided with a recess 67 at one side thereof, adapted to receive a suitable adjusting means or device, (herein shown as a threaded spindle 68' and an adjustable and removable thumb-piece 68,) and which spindle extends through said recess 67 and enters the side wall of the bracket, whereby the lever can be adjusted into various positions to increase or diminish the size of the mouth or nozzle. A suitable spring 69 (shown preferably helical) is interposed between the side wall of the bracket or apron and the lever 65, to thereby hold the same in position, and the adjusting device is shown provided with a stop-collar or abutment 70 to limit the movement thereof.

The lever 65 is shown provided with a fin-

ger-piece 65' in order to manipulate the same, if necessary, and is cut away adjacent to its recessed portion, to thereby permit the same, together with the gears, to be disposed in their respective recesses flush with the outer wall of the apron or bracket, and in order to secure the same in position and also constitute one wall of the feed-channels a removable closure or cap 71 is secured relatively to the face of the bracket or apron by suitable fastening devices, such as thumb-screws 72. It is obvious, however, that other means operable on the same principle might be substituted for said lever without departing from the scope of my invention.

In the use of this improved apparatus the lever or handle 41 is actuated to operate the gear-wheel 34 and thereby move the rack-slide 29 upward, together with the piston, so that the same can be removed from the reservoir-tank. The paste or composition is then placed in the tank and the piston replaced therein, whereby by means of the spring 36 said piston will exert a constant pressure on the paste, to thereby force the same through the strainer and into the conduits to the feeding mechanism, which is placed in rotation by the driving-shaft 57, and by means of which the paste will be regularly supplied or forced through the channel or conduit 60 to the web of paper or other material, along the edge thereof, as said material is moved beneath the same by the endless conveyer or belt 100, and in case any obstruction or foreign substance passes through the strainer and is too large to be forced through the mouth or feed-nozzle the spring 69 of the regulating-lever permits said lever to be forced back to allow the passage of such matter and thus prevent the clogging of the feed-passages.

In the use of this improved apparatus the paste, which is preferably in a semifluid condition, can be constantly, regularly, and uninterruptedly forced or supplied in any desired size of stream to the web of paper, and the various parts of the apparatus can be quickly and easily taken apart to cleanse the same or for other purposes.

It will be observed that the force-feed mechanism is held in place in the bracket 45 by the removable cap 71, and that when said cap is detached the mechanism is exposed and can be readily removed for the purpose of cleansing or for replacing the same by other mechanism suitable for the purpose.

While I have shown a rotary pump or force-feed-device as preferably employed for evenly distributing the paste, yet it is distinctly to be understood that any suitable device for this purpose disposed in the same relation to the reservoir is within the purview of my invention.

Having described my invention, I claim—

1. The combination with a reservoir adapted to contain paste, said reservoir having an outlet; of a force-feed device located adjacent

to said outlet at the delivery side thereof, said device being constructed to apply a continuous stream of paste to the material under treatment and a feed-channel through which the paste is forced in a thin stream by said device.

2. The combination with a reservoir adapted to contain paste, said reservoir having an outlet; of a rotary force-feed device at the delivery side of said outlet; and a feed-channel through which a thin, continuous stream of paste may be forced by said feed device.

3. The combination with a reservoir adapted to contain paste, and a bracket or apron extending from the reservoir and having a conduit communicating therewith, of a force-feed device carried by the bracket; and a feed-channel through which a thin, continuous stream of paste may be forced by said device.

4. The combination with a reservoir having an outlet, of a force-feed device for forcing a continuous stream of paste from the reservoir; a feed-channel; and means for regulating the size of the stream of paste as it issues from said channel.

5. The combination of a reservoir and a bracket or apron extending from the same and containing a conduit communicating with the reservoir, of a removable force-feed device carried by the bracket and constructed to force a continuous stream of paste from the reservoir to and upon the material under treatment.

6. The combination with a reservoir having a bracket or apron extending from the same, said bracket having a conduit; of a force-feed device carried by the bracket; a feed-channel; and means for regulating the size of the stream of paste forced through said channel.

7. The combination with a reservoir, of a bracket projecting therefrom, said bracket having a conduit communicating with the reservoir; a pair of gears, constituting a force-feed device, removably journaled in said bracket; and a removable cap for holding said gears in position.

8. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit therein leading from and communicating with said reservoir; and feeding mechanism carried by said bracket adjacent to said conduit, and comprising a pair of feed-gears adapted to convey a stream of paste into position for use.

9. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit therein leading from and communicating with said reservoir; feeding mechanism carried by said bracket adjacent to said conduit, and comprising a pair of intermeshing gears adapted to convey a stream of paste into position for use; and means for rotating said gears.

10. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit therein leading

from and communicating with said reservoir; feeding mechanism carried by said bracket adjacent to said conduit, and comprising a pair of intermeshing gears adapted to convey a stream of paste into position for use; and means supported by said bracket for regulating the size of such stream, and comprising an adjustable device adapted to increase or decrease the size of said conduit adjacent to the mouth thereof.

11. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit leading from and communicating with said reservoir; and an adjustable spring-actuated device in position and operative to increase or decrease the size of said conduit adjacent to the mouth thereof, to regulate the size of the stream, and automatically adjustable to permit the passage of foreign material from said conduit.

12. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit therein leading from and communicating with said reservoir; feeding mechanism carried by said bracket adjacent to said conduit, for regularly supplying a stream of composition to the material to be operated on, and comprising a pair of intermeshing gears; and means adjustably supported by said bracket, for regulating the size of said stream, and comprising a lever pivotally secured to said bracket; an adjusting device carried by said bracket and engaging said lever; and a spring on said adjusting device intermediate said lever and bracket.

13. The combination of a reservoir having a bracket or apron extending from the same, said bracket having a conduit leading from and communicating with said reservoir; feeding mechanism carried by said bracket adjacent to said conduit, for regularly supplying a stream of paste to the material to be operated on; means in position for regulating the size of the stream; and a removable cap secured to said bracket, for closing said conduit.

14. The combination of a reservoir having an apron or bracket extending from the same, said bracket having a conduit therein leading from and communicating with said reservoir; a strainer in said reservoir above said conduit; feeding mechanism carried by said bracket adjacent to said conduit for regularly supplying a stream of composition to the material to be operated on, and comprising a pair of intermeshing gear-wheels; and means for regulating the size of the stream.

15. The combination with a reservoir, of a bracket; a pair of gears constituting a force-feed device removably journaled in said bracket, one of said gears having a stud projecting therefrom; a driving-shaft engaging said stud; and a removable cap for holding the gears in position on the bracket.

16. The combination of a reservoir having a bracket or apron extending below the same,

said bracket having a conduit leading from and communicating with said reservoir; feeding mechanism carried by said bracket, and comprising a pair of intermeshing gear-wheels adapted to convey a stream of composition into position for use; means for regulating the size of said stream; a piston in said reservoir and adapted to hold the composition under pressure; and spring-actuated gear mechanism operatively connected with said piston for holding the same in engagement with said composition.

17. The combination of a reservoir; a piston therein; a rack-slide supported adjacent to said piston and provided with an arm having a bifurcated sleeve adapted to receive the rod of said piston and from which it is removable; and a spring-actuated gear in position to engage said rack-slide, to thereby hold the piston in engagement with the contents of the reservoir.

18. The combination of a reservoir; a piston therein; a rod connected to said piston and having a neck and a collar; a rack-slide in position adjacent to said reservoir and provided with an arm having a bifurcated sleeve adapted to receive said neck, and said sleeve having a countersunk or recessed portion adapted to receive said collar; and spring-actuated gear mechanism in position to engage said rack.

19. The combination of a reservoir; a piston therein; a rack-slide adjacent thereto and operatively connected with said piston; a spring-actuated gear-wheel supported in position to engage said rack-slide; and means for actuating said gear-wheel, to thereby actuate the rack-slide and piston.

20. The combination of a reservoir; a piston therein; a rack-slide in position and operatively engaged with said piston; a casing adjacent to said rack-slide; a gear-wheel in said casing and meshing with the teeth of said rack-slide; and a spring connected to said gear-wheel and to said casing.

21. The combination of a reservoir; a piston therein; a rack-slide in position and operatively engaged with said piston; a casing supported in position relatively to said rack-slide and having a removable cap; a gear-wheel supported on a shaft journaled in said cap and in position to mesh with said rack-slide; and a spring connected to said gear-wheel and cap.

22. The combination of a reservoir; a piston therein; a rack-slide operatively engaging said piston; a casing supported in position relatively to said rack-slide, and having a removable cap having a hub; a gear-wheel supported on a shaft journaled in said hub and in position to mesh with said rack-slide; a helical spring carried on said hub and having one end thereof secured to said gear-wheel, and its opposite end to said removable cap; and a handle secured to said shaft, for manipulating said gear-wheel and thereby the rack and piston.

23. In combination with a fixture having a driving-shaft; of a reservoir having a bracket or apron projecting from the same, said bracket having a conduit therein leading from and in communication with said reservoir; feeding mechanism journaled on said bracket, and comprising a pair of intermeshing gears, one of said gears having its journal in operative engagement with the driving-shaft, whereby said intermeshing gears will be rotated.

24. The combination of a reservoir having a bracket or apron projecting from the same, said bracket having a conduit communicating with said reservoir and leading therefrom, the side wall of said conduit adjacent to its lower end forming a fixed lip; feeding mechanism carried by said bracket, and comprising a pair of intermeshing gears, one of said gears being in position to intersect the conduit and convey a stream of composition into position for use; and a lever pivotally supported on said bracket and having its lower end formed to constitute an adjustable lip adjacent to said fixed lip, whereby the size of said stream is regulated.

25. The combination of a reservoir; a piston therein; a rod connected to said piston and having a neck and a collar; a bifurcated sleeve provided with a countersunk or recessed portion adapted to receive said collar; and means for supporting said sleeve.

26. In combination with a reservoir and its delivery conduit; a force-feed device; and a removable cap for holding said device in position, whereby when said cap is detached the said feed device can be readily removed.

FRANCIS H. RICHARDS.

Witnesses:

FRED. J. DOLE,
HENRY BISSELL.