H. C. HERR.

PASTE APPLYING MECHANISM.

APPLICATION FILED APR. 22, 1907.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

913,008.

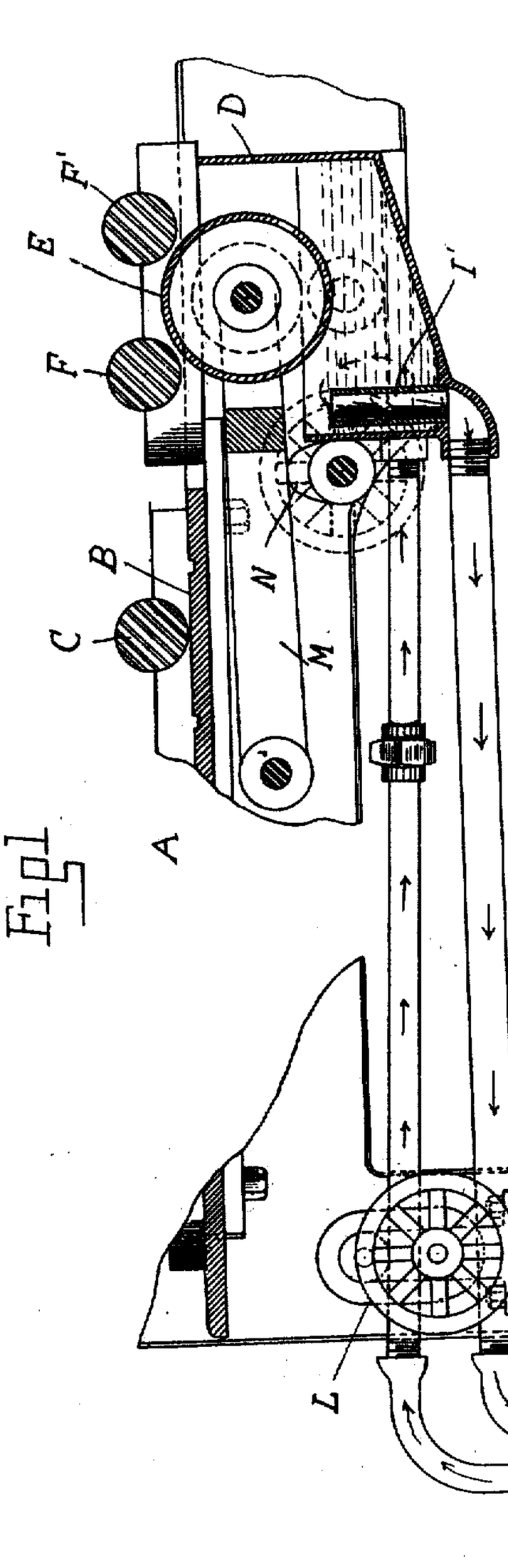

Fig 1

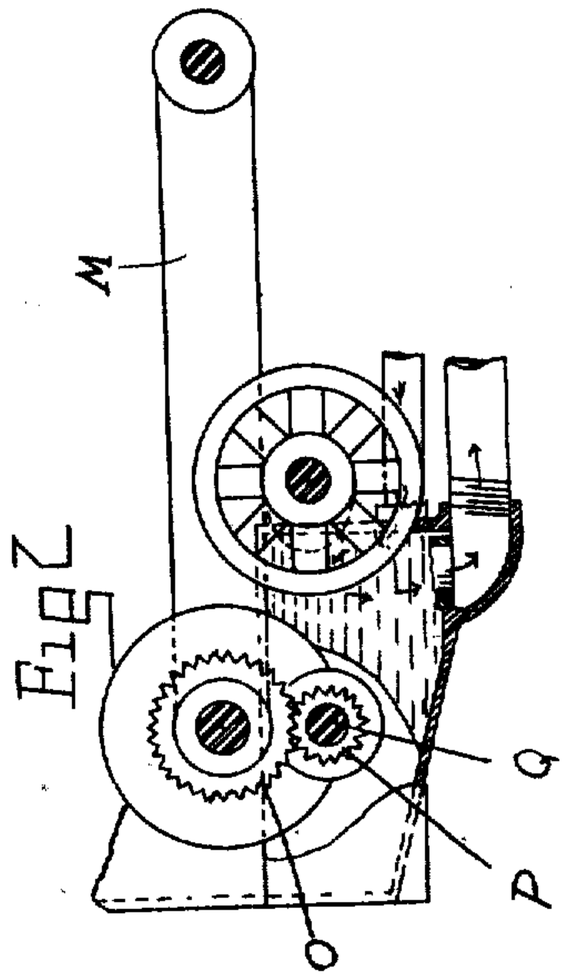

Fig 2

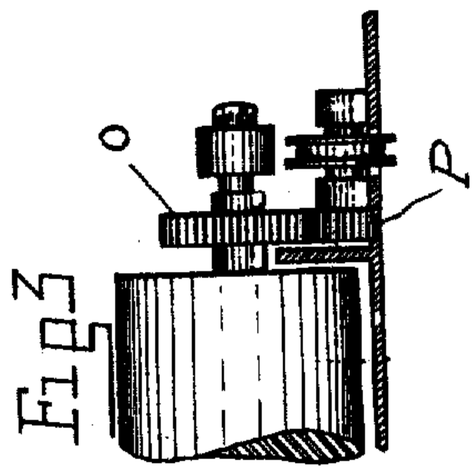

Fig 3

WITNESSES

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2 SHEETS—SHEET 2.

Fig 4

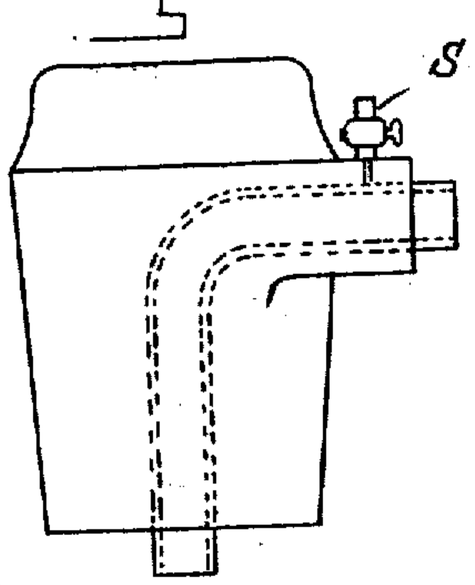


Fig 5

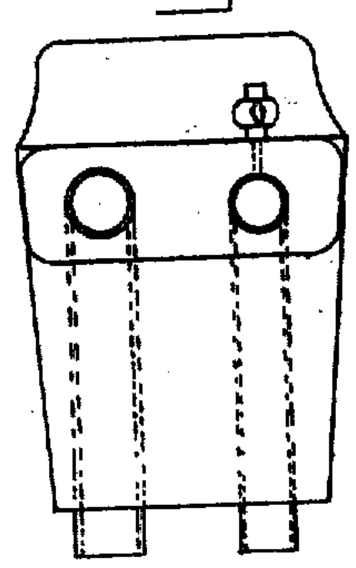


Fig 6

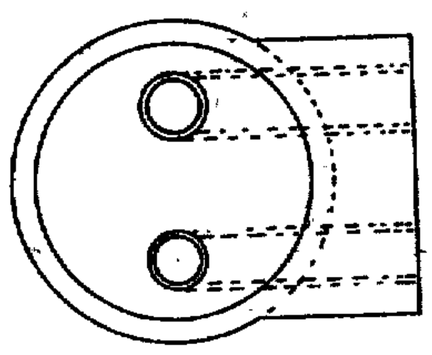
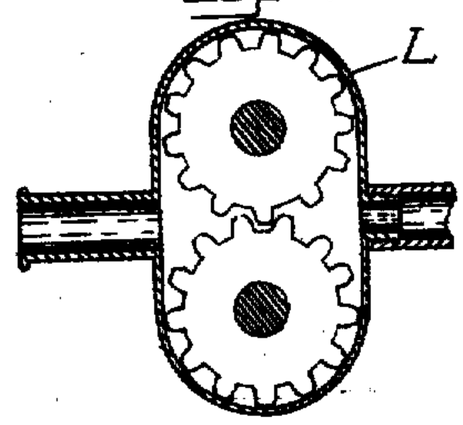


Fig 7



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UNITED STATES PATENT OFFICE.

HENRY C. HERR, OF DETROIT, MICHIGAN.

PASTE-APPLYING MECHANISM.

No. 913,008. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed April 22, 1907. Serial No. 369,538.

To all whom it may concern:

Be it known that I, HENRY C. HERR, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Paste-Applying Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to paste-applying mechanism, and has for its object the obtaining of a construction in which the hardening of the paste, so as to interfere with the operation of the mechanism, is prevented.

The invention consists, first, in the means for preventing the formation of a scum or film of hardened paste in the paste receptacle; second, the means for preventing the hardening of the paste on the paste-applying roll, and, further, in the peculiar construction, arrangement and combination of parts as hereinafter set forth.

In the drawings, Figure 1 is a sectional elevation of a portion of a machine provided with my improved pasting mechanism; Fig. 2 is an elevation of a portion of Fig. 1; and Fig. 3 is a side elevation of Fig. 2. Figs. 4, 5, and 6 are respectively side and front elevations and a plan view of the bung, through which the circulating pipes pass; and Fig. 7 is a section through the pump.

In the construction illustrated, and which will be described, the paste-applying mechanism is employed for coating the surface of a continuously fed paper strip used in the manufacture of multi-ply paper board. My improvements are, however, applicable to other uses. In the manufacture of multi-ply paper board, the adjacent faces of the paper are usually coated with a rapidly drying adhesive such, for instance, as a solution of silicate of soda. This substance, when exposed to the air, hardens in so short a time that difficulty is experienced in preventing the clogging of the apparatus, and particularly the formation of a hard scum over the top of the solution in the container therefor. I have overcome this difficulty by providing means for circulating the solution and for constantly drawing off from the surface and feeding in from below.

A is a suitable frame work, B a bed or table thereon, over which a paper strip is fed, and C are rolls for holding the strip on the table.

D is the paste container and E is a paste-applying roll, having a portion of its circumference immersed in the paste and another portion normally in contact with one face of the paper strip, which is preferably held thereagainst by rolls F F'.

G is a barrel or other closed receptacle for containing a quantity of paste, in addition to that which is in the container D, and from which the latter is supplied.

H and I are respectively out-going and return conduits from the receptacle G to the receptacle D. As shown, these conduits pass through a bung J, one of them extending by the tube K to the bottom of the receptacle G and the other terminating at the top of said receptacle. The opposite ends of the conduits are connected to the tank D, and the conduit I extends upward therein to the plane in which it is desired to maintain the level of the surface of the liquid.

L is a pump arranged to propel the liquids through the conduits H and I.

With the construction as thus far explained, whenever the pump L is in motion, the fluid is constantly delivered through the conduit H into the receptacle D, being withdrawn from the receptacle G, while this will create a partial vacuum in said receptacle, which will suck the overflow in the receptacle D through the conduit I and back into the receptacle G. Inasmuch as the conduit I extends near the surface of the fluid in the receptacle D, there will be a constant movement from all portions of said surface towards the said conduit I, so that no portion of the fluid is permitted to remain exposed to the air for a sufficient length of time to harden.

The roll E is preferably driven by the friction of the paper strip when drawn thereover. It is, however, frequently necessary to throw the roll out of contact with the strip, as where a new strip is to be engaged with the machine, and I have therefore provided means for raising and lowering the roll comprising a pair of rock arms M and a cam N for engaging one of said arms to raise and lower the same. When the roll is out of contact with the paper, the hardening of the solution upon its surface is prevented by the provision of an auxiliary mechanism for rotating the roll. This preferably consists of sharp toothed gears O and P respectively on the shafts of the roll E and on the constantly driven shaft Q. The arrangement is such that whenever the rock arms M are lowered by the operation of the cam N, the

wheels O and P will be thrown into mesh, so that the roll E is driven. When the rock arms M are again raised, the engagement between the gears O and P is broken, so that the roll E may be driven solely by the paper strip and at the same time peripheral speed.

When the apparatus is not in use, if any of the paste is permitted to remain in the receptacle D it would harden and interfere with the subsequent operation. I have, therefore, provided means for draining this receptacle, and to this end the outlet conduit I has a portion I′ which extends from the bottom of the receptacle to the level of the overflow. The receptacle D is also formed with an inclined bottom so as to drain its contents to the outlet pipe when the section I′ is removed. Thus, by removing this section, the paste is permitted to feed by gravity into the container G. Inasmuch, however, as the container G is a closed receptacle, it is necessary to provide an escape for the air therein, which is to be displaced by the paste from the receptacle D. For this purpose, I preferably provide a pet cock S, and preferably arrange this on the bung.

What I claim as my invention is:

1. In a pasting apparatus, the combination with an open top receptacle, of a closed container and fluid circulating connections between said receptacle and container whereby the surface portion of the fluid in said receptacle is constantly returned to the container and the supply to said receptacle is renewed from the container.

2. In a pasting apparatus, the combination with a receptacle containing the paste fluid, of a paste-applying roll immersed in said fluid, means for rotating said roll by the movement of the material to be coated with paste and auxiliary means for rotating said roll while out of contact with the material to be coated.

3. In a pasting apparatus, the combination with a paste receptacle, of means for feeding a strip to be pasted thereabove, a paste-applying roll, and means for vertically adjusting said roll into or out of contact with said strip whereby a normal operation of the roll is driven from the strip, and auxiliary means for driving the roll upon the lowering of the same out of contact with said strip.

4. A pasting apparatus comprising a receptacle for the paste, and from which it is applied to the work, a container for a supply of paste, connections between said receptacle and container, and means for withdrawing the surface portion of the fluid to prevent the formation of a scum and to maintain a constant level.

5. A pasting apparatus comprising a receptacle for the paste, from which it is applied to the work, a container for a supply of paste, and means for forcing a circulation of the paste from said container to said receptacle, and means for withdrawing the surface portion of the fluid to prevent the formation of a scum and to maintain a constant level.

6. A pasting apparatus comprising a receptacle for the paste, from which it is applied to the work, a closed container for a supply of paste, means constantly operating while the apparatus is in use for circulating the paste from said container to and from said receptacle, and for withdrawing the surface portion of the fluid and means for draining the paste in said receptacle back into said container when the apparatus is not in use.

7. A pasting apparatus comprising a receptacle for the paste, from which it is applied to the work, a container for a supply of paste, connections between said container and receptacle, a pump constantly operating while the apparatus is in use for propelling the paste from said container to said receptacle and an overflow through which the surplus paste is returned to said container by the combined action of gravity and suction.

8. A pasting apparatus comprising a receptacle for the paste, from which it is applied to the work, a closed container for a supply of paste arranged at a lower level, connections between said receptacle and container, including an overflow connection for normally maintaining a quantity of paste in said receptacle, means for draining said receptacle when not in use, and means for venting said container to permit of the displacement of the air therein during the drainage of the paste from the receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. HERR.

Witnesses:

NELLIE KINSELLA,

JAMES P. BARRY.