E. E. ALLEN.

FORCING MACHINE.

APPLICATION FILED OCT. 11, 1911.

1,098,873. Patented June 2, 1914.

Fig. 1.

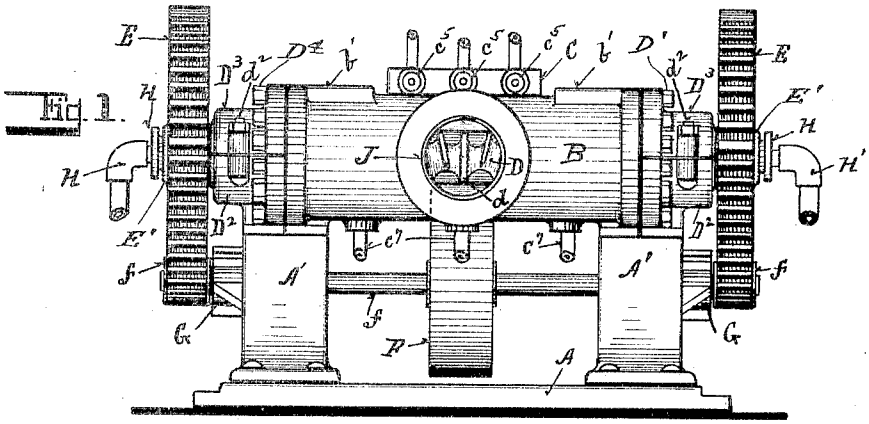


Fig. 2.

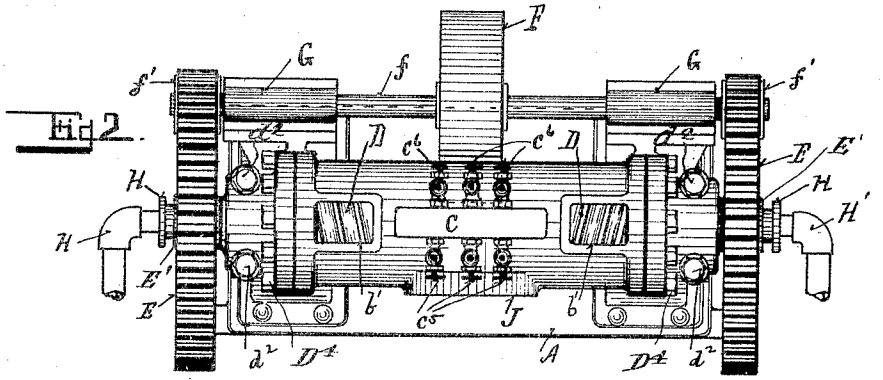


Fig. 3.

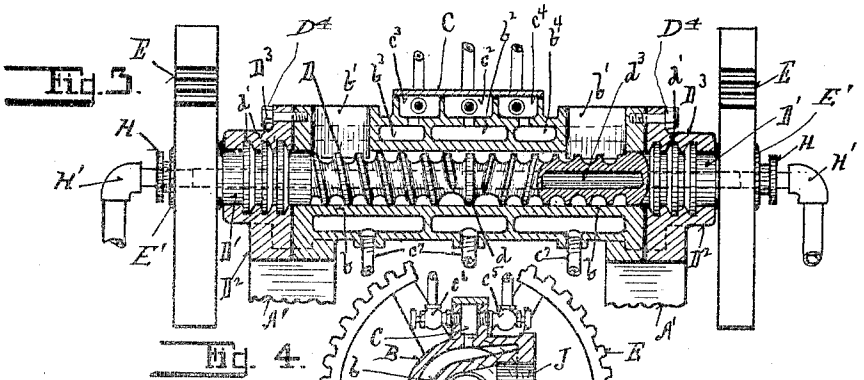
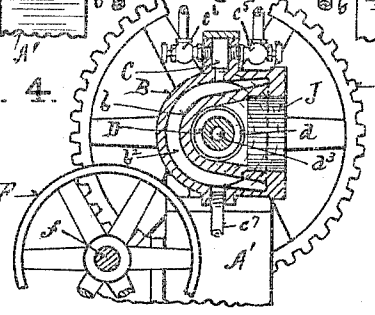


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD E. ALLEN, OF ERIE, PENNSYLVANIA, ASSIGNOR TO THE ALLEN MACHINE COMPANY, OF ERIE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FORCING-MACHINE.

1,098,873. Specification of Letters Patent. Patented June 2, 1914.

Application filed October 11, 1911. Serial No. 653,998.

To all whom it may concern:

Be it known that I, EDWARD E. ALLEN, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Forcing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to forcing machines, and has for its object the construction of a forcing machine adapted to manipulate plastic material in which machine the end-thrust of the forcing screw is practically eliminated. This and other features of my invention will appear hereinafter in the specification, and are illustrated in the drawings in which:

Figure 1 is a front view in elevation of my improved forcing machine. Fig. 2 is a top or plan view thereof. Fig. 3 is a vertical central section of the body portion thereof showing portions of the active mechanism in elevation. Fig. 4 is a transverse central section of the same.

Machines of this character are generally used in factories wherein is treated plastic material, such as clay or rubber, which in the transformation from a mass without form into a body with form, as in the making of bricks, tile, carriage tires, and rubber tubing, is forced through dies of the required formation, to produce a continuous column or tube, which may afterward be dried and burned, or otherwise cured. Also in the rubber re-claiming art my improved machine may be employed to force the plastic, reclaimed rubber through a suitable screen secured in the case of the machine, for the purpose of separating foreign substances, which have not been destroyed by the action of the chemicals employed, from the mass.

In these drawings A, indicates the base of the machine, and A′ A′ indicate pillars for supporting the operative parts thereof. Upon the pillars A′, I mount the body B, of the machine which is preferably formed of cast metal having a hollow central longitudinal cylinder b, therein which is surrounded by annular jacket chambers b^2, b^3 and b^4 which may be filled with a temperature controlling medium when desired, and there are also provided feed openings b' b' adjacent to the ends of the cylinder, which extend through the walls of the cylinder b and outward through the jacket chambers b^3 and b^4, as shown in the drawing. Upon the upper side of the body B, I place a steam or water chest C which is divided into compartments c^2, c^3 and c^4 each of which compartments communicating with one of the chambers b^2, b^3 and b^4, and each of said compartments is provided with inlet cocks c^5 on one side for water and c^6 on the other side for steam, and the jacket chambers b^2, b^3 and b^4, are also provided with escape pipes c^7, through which the temperature regulating medium in the jacket chambers may be permitted to escape. Within the hollow central cylinder b, I place a forcing screw D, which is provided with a right-and-left worm thread, and around the middle portion of this forcing screw D, I preferably place a circumferential supporting ring or rib d, which may contact with the inner wall of the central cylinder b, and prevent any undue springing of the screw D. At each end the screw D is supported upon journals D′, which are provided with thrust rings d' to provide against certain contingencies hereinafter set forth. These journals D′ are supported in bearings D^2—D^3, the lower half D^2, thereof resting upon the pillars A′, and the upper half D^3 thereof being bolted to the lower half by means of the bolts d^2, as shown, and both halves being secured to the ends of the body B, by means of bolts D^4. The screw D, is preferably provided with a central longitudinal opening d^3 (see Figs. 3 and 4) therethrough, through which water or steam may be circulated in order to regulate the temperature of the screw. Upon the ends of the forcing screw D, outside of the journals D′, thereon, I place suitable driving wheels E preferably of the spur-gear type with the inner ends of the hubs E′ thereof contacting against the outer end of the bearings D^2—D^3, which said wheels E, receiving motion and power through the medium of the pulley F, shaft f and pinions f', mounted in suitable bearings G, on the pillars A′. Stuffing box mechanism H, is provided in each end of the forcing screw D, through which supply and discharge pipes H′ pass, by means of which tempera-

ture regulating mediums may be circulated through the forcing screw D. Opening from the screw-chamber within the central cylinder b at right angles to the axis thereof, I provide a discharge opening J, within which suitable dies, or a screen (not shown), may be secured, the middle jacket chamber b^2 being so extended as to jacket said discharge opening, as shown in Fig. 4.

In operation power is applied to the pulley F, and therethrough to the spur-wheels E which cause the forcing screw D to rotate. Plastic material to be manipulated is then fed into the machine through the openings b', care being taken to keep an equal supply in each opening. In case the supply of material in either opening b', should fall short the thrust rings d' will prevent endwise movement of the screw D. The material fed into the opening b', is caught by the screw and carried from each end toward the discharge opening J, from which it may emerge through a screen or die (not shown) of any suitable form, in a continuously moving stream. During this operation it may be necessary to raise the temperature of the walls of the cylinder b, or to cool them as the case may be; in which case the end portions may be made cool or warm, or the middle portion may be made cool or warm independent of the end portions, by permitting steam or water to circulate through the jacket chambers b^2, b^3 and b^4, and likewise the screw D, can be cooled or warmed by permitting water or steam to circulate through the screw.

Having thus shown and described my invention so as to enable others to construct and utilize the same what I claim as new and desire to secure by Letters-Patent is:

A base plate, pedestals secured thereon, a cylinder having feed openings at each end thereof and a discharge opening at the intermediate portion thereof, a flange around said discharge opening, horizontally divided thrust journal bearings on said pedestals, radial flanges on said bearings, bolts passing through said flanges and secured in the ends of said cylinder, a right and left hand forcing screw within said cylinder and mounted in said bearings, spur-gear wheels secured on the ends of said screw outside of said journal bearings, a drive-shaft mounted in bearings on said pedestals, pinions on said shaft intermeshing with said spur-gear wheels, and means for rotating said shaft, substantially as set forth.

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

EDWARD E. ALLEN.

Witnesses:
H. M. STURGEON,
FLORENCE STOCKERT.

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