

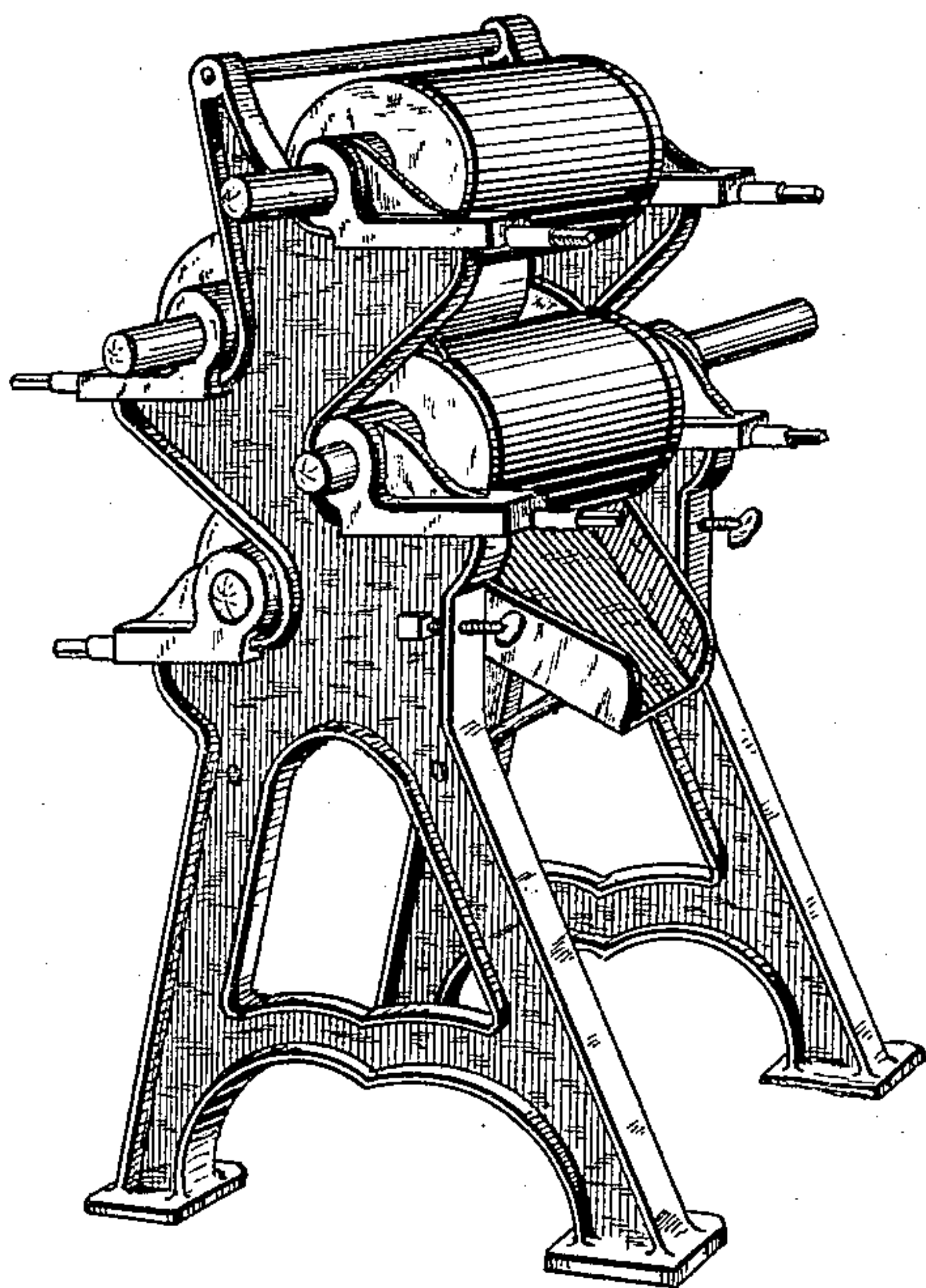
(No Model.)

2 Sheets—Sheet 1.

L. P. CLAWSON.  
INK AND PAINT MILL.

No. 308,138.

Patented Nov. 18, 1884.



*Fig 1*

*Linus P. Clawson*

Witnesses:

*W. A. Seward*  
*John Albores*

Inventor

*by James W. See*

Attorney

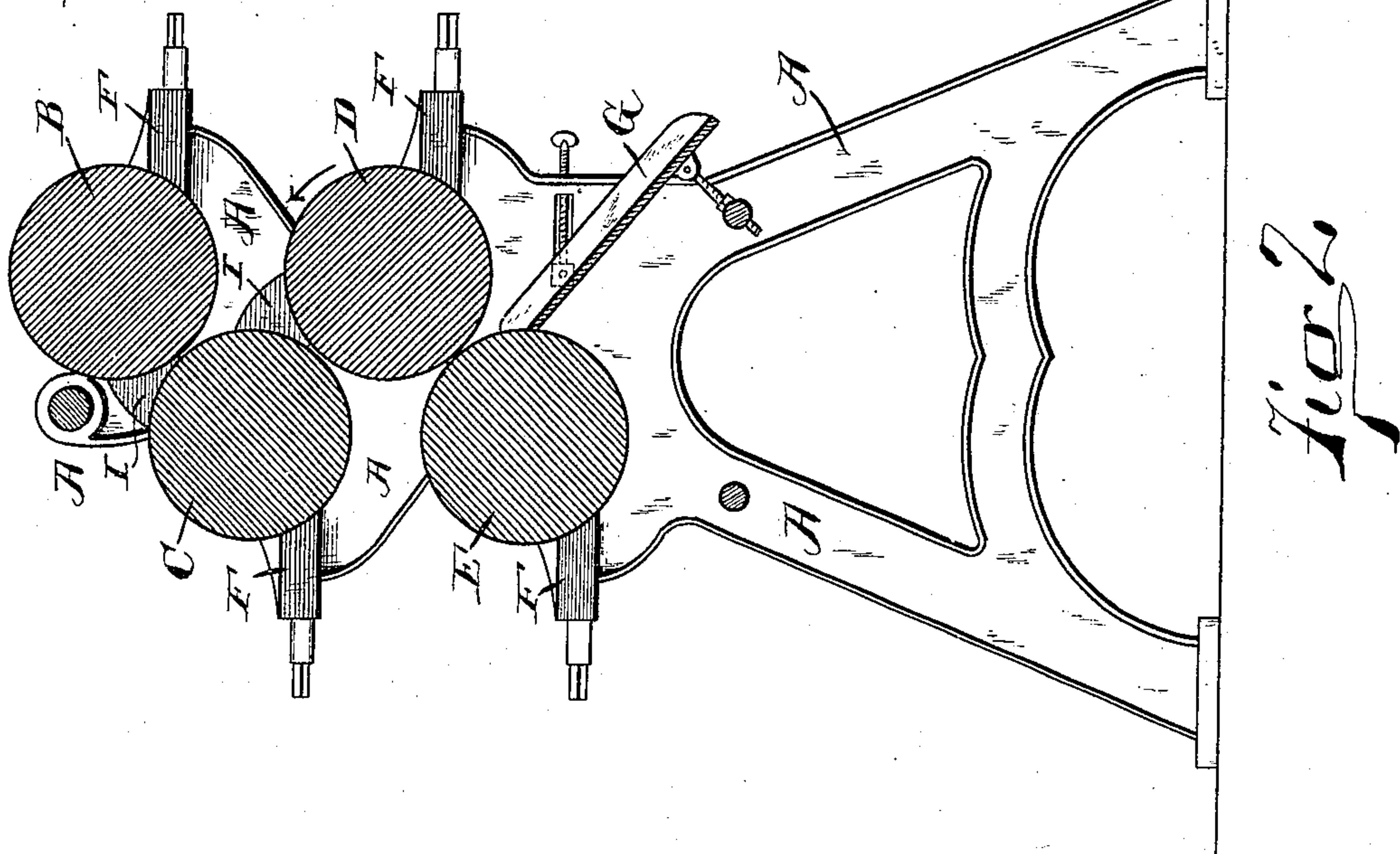
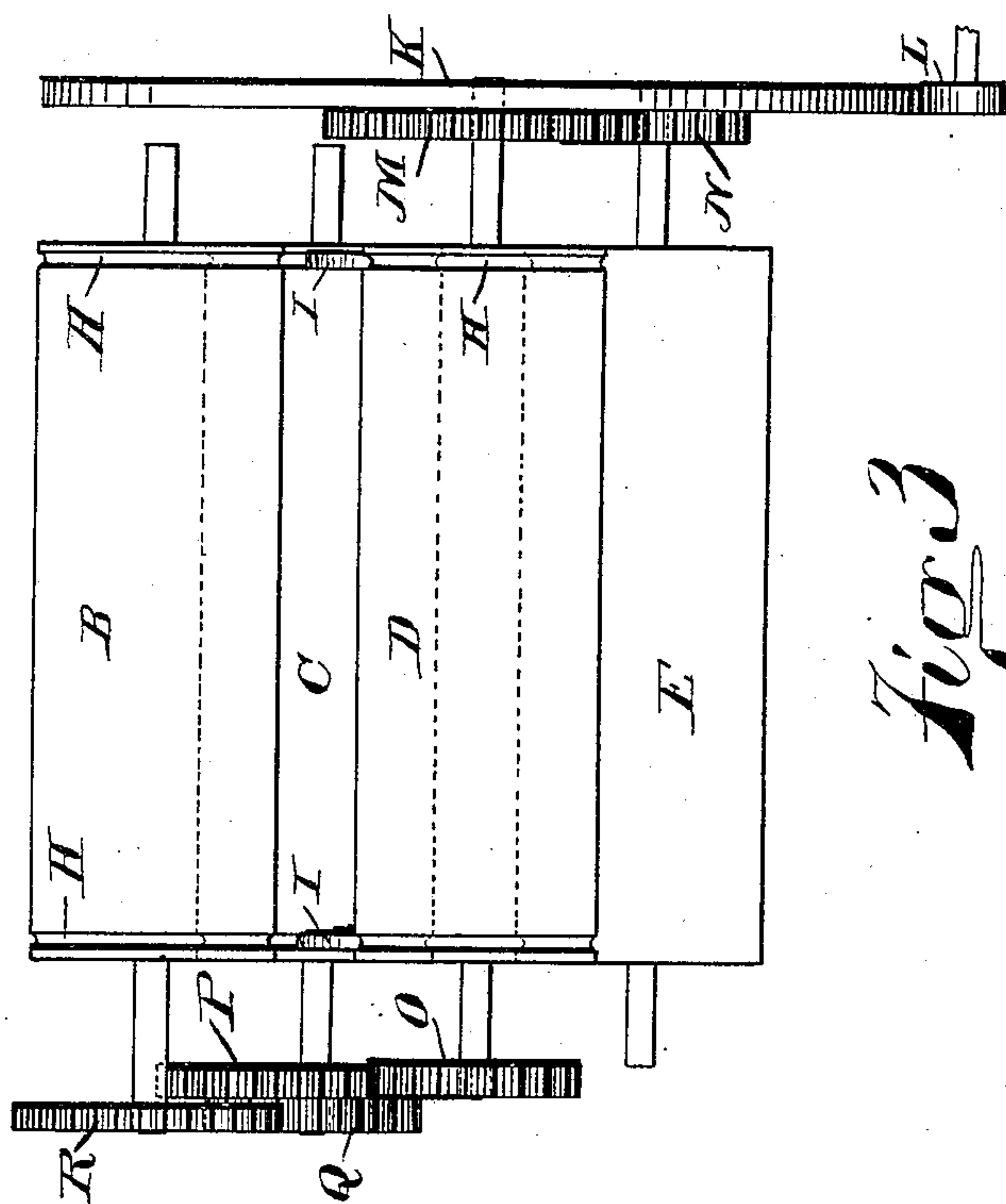
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2 Sheets—Sheet 2.

L. P. CLAWSON.  
INK AND PAINT MILL.

No. 308,138.

Patented Nov. 18, 1884.



Witnesses:

W. A. Seward  
John Alwood

Simon P. Clawson Inventor

by James W. See

Attorney



# UNITED STATES PATENT OFFICE.

LINUS P. CLAWSON, OF HAMILTON, OHIO, ASSIGNOR TO THE BLACK & CLAWSON COMPANY, OF SAME PLACE.

## INK AND PAINT MILL.

SPECIFICATION forming part of Letters Patent No. 308,138, dated November 18, 1884.

Application filed June 2, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, LINUS P. CLAWSON, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Ink and Paint Mills, of which the following is a specification.

This invention pertains to machines for grinding paints, printer's ink, and analogous semi-liquids.

10 The invention will be understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a mill illustrating my improvements, the communicating gearing being omitted; Fig. 2, a vertical section of the mill transverse to the rolls; and Fig. 3, an elevation of the rolls and gearing, the elevation corresponding to the right-hand face of Fig. 2.

20 In the drawings, A represents the framework of the machine; B, the initial roll of the mill arranged at the top of the frame; C, the second roll arranged to operate in peripheral contact with the roll B, and set upon a somewhat lower level; D and E, a third and fourth roll, respectively arranged relatively to each other and to the second roll, as before mentioned regarding roll C; F, boxes for the roll-journals, fitted to adjust inward and outward upon the frame by means of screws; G, an adjustable scraper arranged to remove the ground matter from the final roll E and discharge the same into a suitable receiver; H, circumferential grooves near each end of all  
35 of the rolls, except the final roll E; I, gusset-dams engaging the grooves of contiguous rolls; K, a master-gear fastened upon the shaft of roll D; L, a driving-pinion engaging gear K, and intended to be actuated by any suitable motor-shaft adapted to drive the machine; M, a gear fast upon the shaft of roll D alongside of gear K; N, a gear of lesser diameter than gear M, fast upon the shaft of roll E, and engaging the gear M; O, a gear fast upon the shaft of roll D at the end opposite the gearing-work heretofore referred to; P, a gear of greater diameter than gear O, fast upon the shaft of roll C and engaging the gear O;  
45 Q, a gear fast upon the shaft of roll C alongside the gear P, and R a gear of greater di-

ameter than gear Q, fast upon the shaft of roll B and engaging the gear Q. The rolls are preferably of metal, made truly cylindrical, and accurately adjusted in parallelism. Through the medium of gears L and K motion is received by the mill, the roll D being driven in the direction indicated by the arrow. From the roll D rotary motion at a higher velocity is transmitted to the roll E through the medium of gears M and N. The roll C receives rotary motion from the roll D and at a lesser velocity through the gears O and P. The roll C transmits rotary motion at a lower velocity to the roll B through the medium of gears Q and R. The result of this arrangement of transmitting mechanism is that the top roll, B, has a certain speed of rotation, the next one, C, a higher speed of rotation, the third roll, D, a speed of rotation higher than that of roll, C, and the roll E a speed of rotation higher than roll D. In practice I so arrange the gearing that the rotative speed of each succeeding roll shall be to the rotative speed of the preceding roll as one and one-half is to one. This question of differential speed has reference to the peripheries of the rolls, and this differential speed may be secured by means of rolls of equal diameter differentially geared, as indicated, or it may be secured by means of rolls of unequal diameter, either equally or differentially geared, according to the proportion of diameter. The roll C is arranged with its axis at such level below the axis of roll B that the approaching portions of the peripheries of the two rolls will form a gutter or trough having a floor sloping slightly toward the line of peripheral contact of the rolls, and the same with the other contacting pairs of rolls. The ink or other material to be ground is applied to the upper surface of roll B through a hopper, or by means of a spatula. The ink is carried down and operated upon between the contacting surfaces of the two rolls, and a portion of the same adheres to the roll C, and is carried downward and operated upon by the contacting surfaces of rolls C and D, and the roll D, moving at a higher peripheral rate of speed than the roll C, carries a portion of the ink downward to be operated upon by the rolls D and E, and the



scraper G removes the ground ink from the roll E and discharges it out of the machine. The adjustable boxes F serve in adjusting the rolls into proper grinding contact. The gus-  
5 set-dams I are thin pieces of metal or other material seating edgewise in the roll-grooves H, and serving to prevent a side flow of the ink over the ends of the rolls. During the  
10 passage of material through the mill it becomes thinly spread upon the rolls and more or less heated by the grinding action, and by the arrangement of the rolls set forth I cause the ink to be passed from one grinding con-  
15 tact to the next one with the least possible exposure to the atmosphere. The number of rolls may be added to, but in practice there is a limit to the number which may be employed. As each succeeding lower roll must  
20 run faster than its predecessor, it follows that with a very extended series of rolls the bottom roll will run exceedingly fast, or else the

upper roll will run exceedingly slow. It therefore follows that under certain circumstances a mill with four or five rolls may have a greater capacity than a mill with a  
25 greater number of rolls, owing to the higher speed at which the initial roll may be run.

I claim as my invention—

The herein-described mill for grinding ink, paint, and similar semi-fluids, comprising a  
30 series of cylindrical rolls arranged in successive contacts upon succeeding lower levels and geared to revolve at higher peripheral rates of speed as the series is followed downward, and having circumferential grooves at  
35 their ends, gusset-dams engaging the grooves, and a discharge-scraper at the final roll.

LINUS P. CLAWSON.

Witnesses:

J. W. SEE,

W. A. SEWARD.