

Jan. 22, 1929.

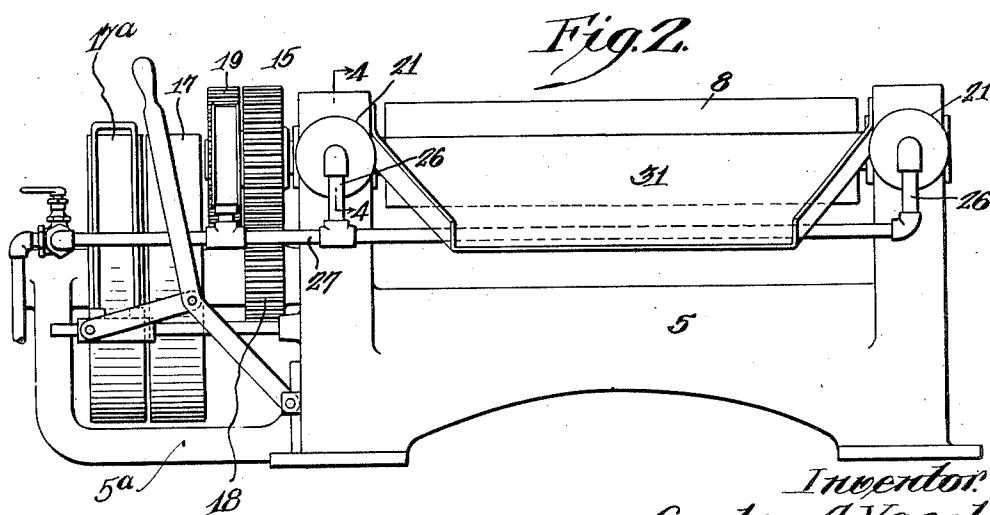
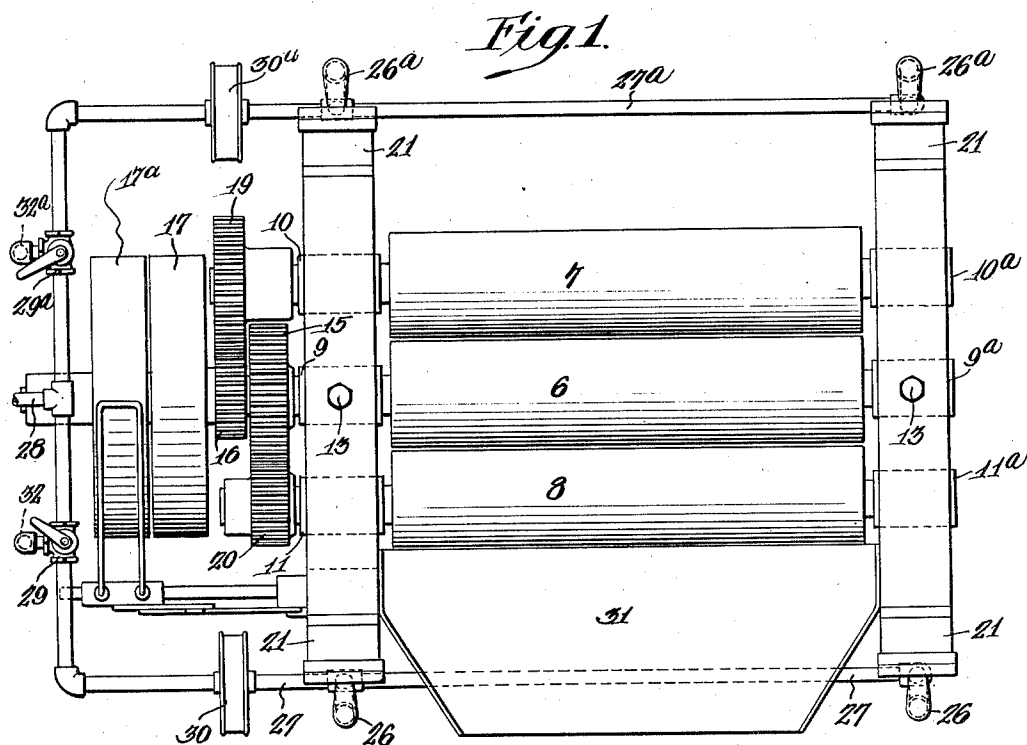
1,699,641

G. A. VASEL

INK GRINDER

Filed Jan. 27, 1927

2 Sheets-Sheet 1



Witnesses:
Walter Chisholm
Wesley Merritt

Inventor:
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his Attorney

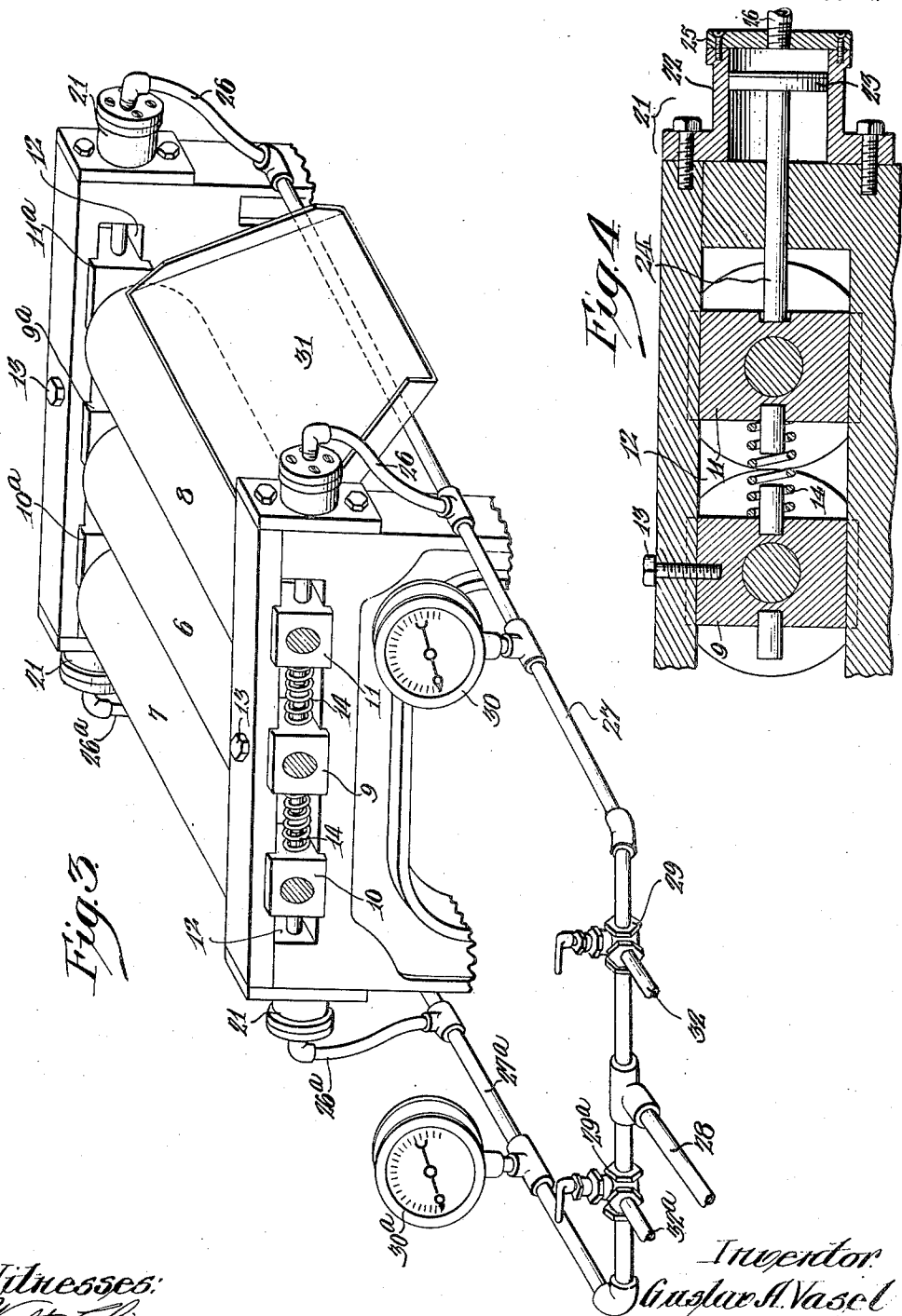
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

GUSTAV A. VASEL, OF PHILADELPHIA, PENNSYLVANIA.

INK GRINDER.

Application filed January 27, 1927. Serial No. 163,911.

My invention relates to color grinders, such as are used for grinding inks and paints, and more particularly to the type having parallel rolls.

In the machines of this type employed at present in this industry, it is necessary to regulate the pressure on each end of each roll by hand, thus depending upon the skill of the operator and requiring him to move from one end of the mill to the other in order to keep the rolls properly adjusted.

The principal object of my invention is to provide means whereby the pressure between the rolls may be regulated from one end of the mill and which will provide a uniform pressure throughout the length of any pair of rolls.

A further object of my invention is to provide means for registering the pressure on the rolls so that the grinding formulas may be scientifically determined in the laboratory and data furnished the operator of the mill whereby he may apply the pressures specified in the formula and thus remove the human element from the grinding process.

A still further object of my invention is to so design these improvements that they may be applied to standard mills of the parallel roll type.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a top plan view of a color grinding mill embodying my invention,

Figure 2 a front elevation of the mill shown in Figure 1,

Figure 3 a perspective view of the same mill with the pulleys and gears omitted for the sake of simplicity, and

Figure 4 a cross section on line 4—4 of Figure 2.

Referring now more in detail to the drawings, the mill has a main frame 5 in which a center roll 6 and outside rolls 7 and 8 are rotatably mounted in bearings 9, 10 and 11 respectively in one end of the frame and in bearings 9^a, 10^a and 11^a in the other end of the frame. The main frame 5 is provided with slots 12 in which bearings 9 and 9^a are rigidly secured by means of suitable bolts 13 while bearings 10, 10^a, 11 and 11^a are slidable therein. Coiled springs 14 are placed between adjacent bearings and tend to move the

slidable bearings away from the fixed bearings.

The axle of roll 6 extends through one end of main frame 5 and has a gear 15 and a smaller gear 16 keyed thereto. A fixed pulley 17, loose pulley 17^a, and a gear 18, meshing with gear 15, are rotatably mounted in a bracket 5^a suitably secured to the main frame. The axles of rolls 7 and 8 extend through the same end of main frame 5 and have gears 19 and 20, respectively, keyed thereon. Gear 19 meshes with gear 16 and gear 20 meshes with gear 15. The grinder is operated by a belt, driven from a suitable source of power, which engages pulley 17 and rotates roll 6 directly and rolls 7 and 8 through gears 18 and 15, 16 and 19, and 15 and 20 respectively.

In order that rolls 7 and 8 may be brought against roll 6, I provide a hydraulic ram 21 at each corner of main frame 5. This ram consists of a cylinder 22 rigidly secured to main frame 5 and having a piston 23 slidable therein. A plunger 24 is secured to piston 23 and abuts the end of a recess formed in the side of each movable roll bearing, as plainly shown in Figure 4. The outer end of cylinder 22 is closed by a cylinder head 25 into which a hydraulic branch line 26 is connected.

The branch lines 26 on one side of main frame 5 are connected to a hydraulic line 27 while the branch lines 26^a on the opposite side of main frame 5 are connected to a hydraulic line 27^a. Hydraulic lines 27 and 27^a are supplied with liquid under pressure from a main line 28. The flow of water to lines 27 and 27^a is controlled by three-way valves 29 and 29^a, respectively, the side outlets of which allow the water in lines 27 and 27^a to drain therefrom when it is desired to release the pressure on rolls 7 and 8. The pressure employed is registered on gages 30 and 30^a installed in lines 27 and 27^a.

After the batch of color has been prepared for grinding, it is fed between rolls 6 and 7 which are geared to turn toward each other. As this material is of a very sticky nature and, as roll 6 rotates faster than roll 7 due to gear 19 being larger than gear 16, it clings to the bottom of roll 6 and is carried upwardly between rolls 6 and 8 which rotate away from one another. As roll 8 rotates faster than roll 6, due to gear 20 being smaller than gear 15, the material is carried outwardly on the top of roll 8 from which it is scraped

by the apron 31 and gathered into a suitable receptacle.

The pressure between rolls 6 and 7 required for the grinding operation is supplied to roll 7 through line 27^a by opening three-way valve 29^a until the gage 30^a records the required pressure. The pressure between rolls 6 and 8 is similarly controlled by valve 29. To release the pressure either during or after the completion of the grinding operation, the valves 29 are turned so that the passage to line 28 is closed and the passage between line 27 and drain line 32 is open. When the pressure has been relieved from cylinder 22, springs 14 will force the rollers apart in the well known manner.

It will thus be seen that, in addition to the data usually compiled in the laboratory, the chemist may add to the formula the number of grinding operations required and the correct pressure for each operation. The grinding mill operator would then be able to apply the correct pressures instead of depending upon his experience and the "feel" of the pressure wheel now used to bring the rolls in contact. Further, the valves and belt shift lever are within reach and the pressure gauges are before his eyes at all times so that he may maintain absolute control of the grinding conditions in the mill.

While I have illustrated and described a preferred embodiment of my invention it will be readily understood that various modifications might be made without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth,

but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claim.

I claim:

A color grinding machine, comprising an intermediate rotatable grinding cylinder mounted in stationary bearings, rotatable grinding cylinders mounted on opposite sides of the first named grinding cylinder, bearings for supporting the said second named grinding cylinders, which bearings are mounted to slide toward and from the stationary bearings of the first named grinding cylinder, piston cylinders mounted in operative relation to the opposite ends of both of the second named grinding cylinders, the axes of the said piston cylinders extending in directions at right angles to the axes of the said grinding cylinders, pistons mounted in the said piston cylinders, which pistons are provided with plungers the inner ends of which contact with the slidably mounted bearings for supporting the second named grinding cylinders, means for supplying fluid under pressure to the said piston cylinders for simultaneously actuating the said pistons therein to thereby simultaneously actuate and adjust both of the second named grinding cylinders with relation to the first named grinding cylinder, and means for regulating and controlling the introduction of fluid into the said piston cylinders and the pressure thereof in said cylinders.

In testimony whereof I have signed my name to this specification.

GUSTAV A. VASEL.