Dec. 4, 1934. C. H. BURR 1,982,901

CONVEYING SYSTEM FOR WOOD GRINDERS

Filed Oct. 30, 1931 2 Sheets-Sheet 1

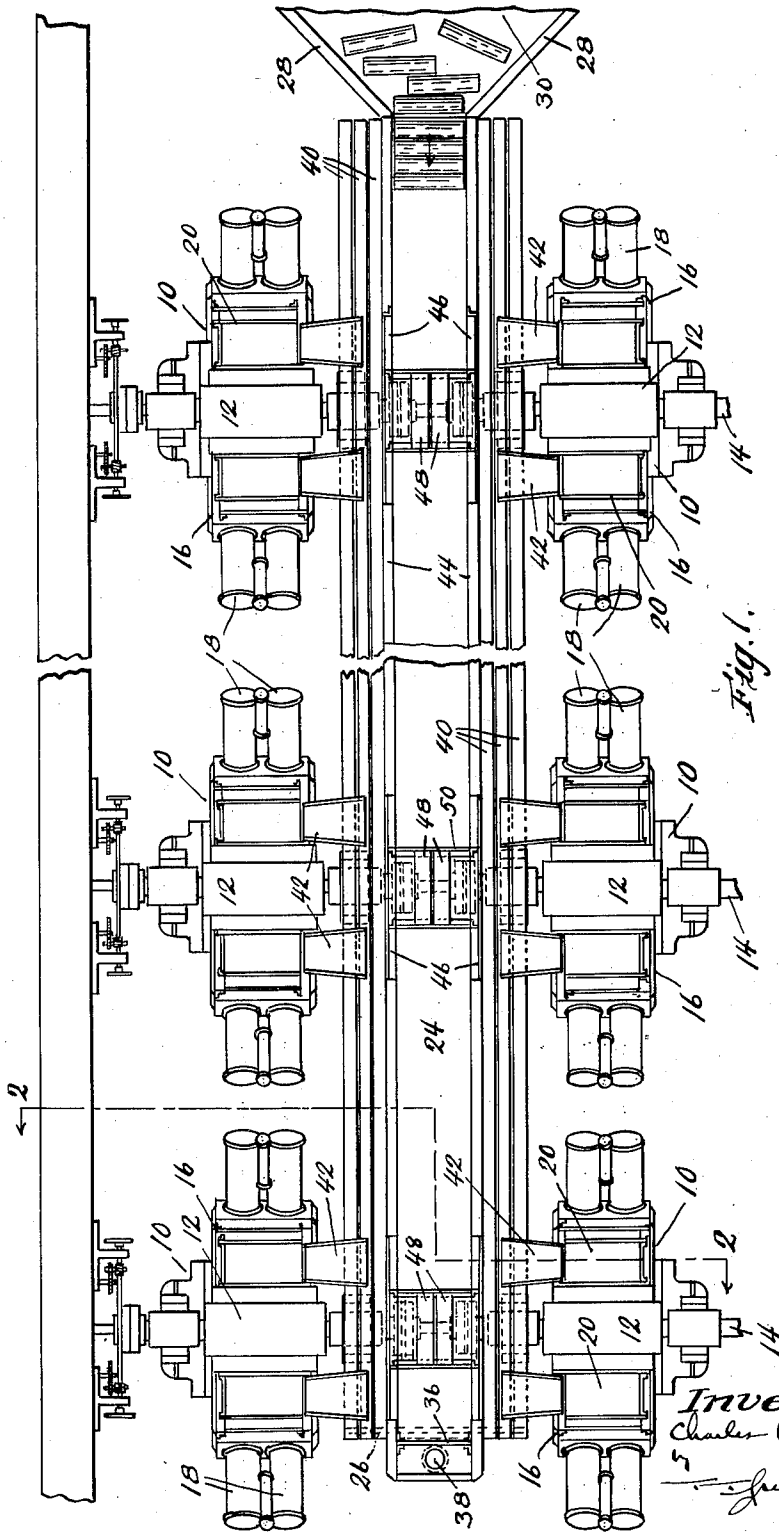

Fig. 1.

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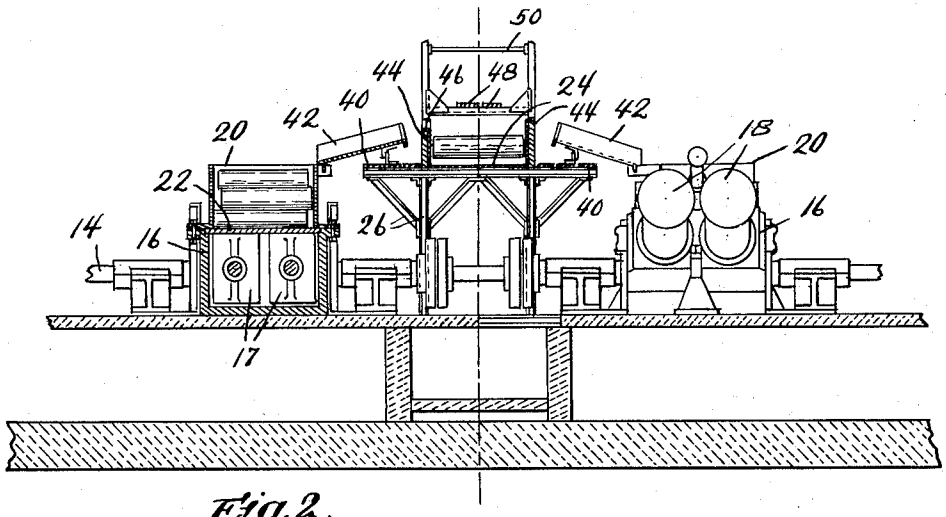

Fig. 2.

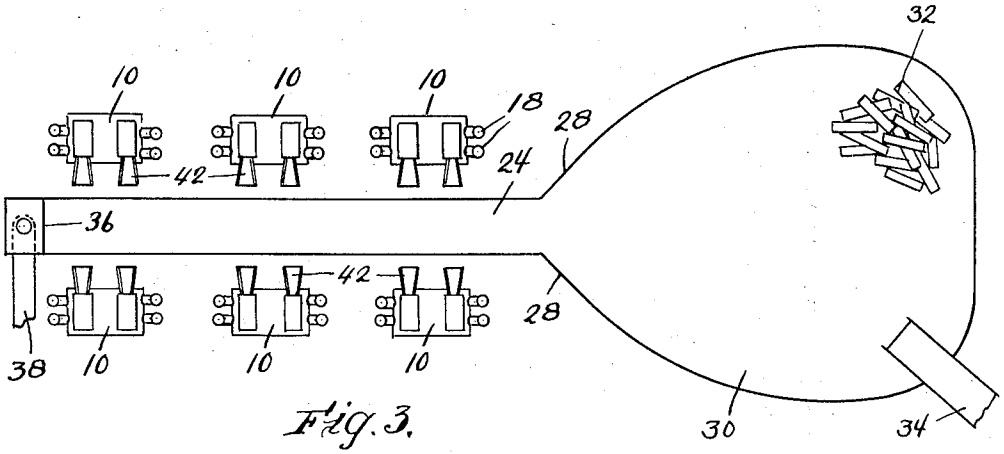

Fig. 3.

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UNITED STATES PATENT OFFICE

1,982,901

CONVEYING SYSTEM FOR WOOD GRINDERS

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Application October 30, 1931, Serial No. 572,000

2 Claims. (Cl. 214—152)

This invention relates to a wood grinding system for making paper pulp and is especially intended, although not necessarily limited, for use with a magazine grinder of the type shown in the Whitcomb patent issued May 6, 1930, No. 1,757,031, which grinder has a magazine that holds enough wood for one charge only of the grinding pocket.

The present practice of loading wood in the storage magazines or hoppers of grinders of the type referred to in the above patent is for an attendant to load a pile of wood on a truck and then to wheel the truck to the grinder and lift the wood from the truck and deposit it into the hopper. This involves hard manual labor as the logs are heavy and have to be lifted a considerable height to the top of the hopper; and ordinarily one man only can take care of the supply of wood to four hoppers or two double grinders.

It is an object of the present invention to provide a wood grinding system wherein the work of filling the hoppers with wood is greatly lightened and wherein one attendant can take care of the supply of wood to a considerably greater number of grinders than heretofore.

A further object of the invention is a wood grinding system comprising a series of hopper type grinders and wood conveying means which maintains a supply of wood at each grinder in position where the wood can be placed into the hoppers of the grinders with little exertion.

Another object of the invention is in the provision of a wood grinding system comprising a series of hopper type grinders arranged in two lines and a trough located between the lines of the grinders and higher than the open tops of the hoppers, the trough containing a stream of water and communicating with a storage pond containing a large supply of logs that float down the trough by the current of water therein, assisted by an attendant, and assuming positions transverse of the trough, and chutes placed between the trough and each hopper so that the logs in the trough can be removed therefrom and placed in the chutes where they are guided to fall into the hoppers.

A yet further object of the invention is generally to improve upon wood grinding processes and systems.

Fig. 1 is a plan view of the battery of wood grinders and the conveyor trough embodying the present invention.

Fig. 2 is a sectional elevation taken along line 2—2 of Fig. 1.

Fig. 3 is a plan view illustrating diagrammatically the wood grinding system and apparatus embodying the present invention.

As here shown, the system embodying the present invention includes a series of double grinders 10 arranged in opposed spaced relation in parallel rows. The particular type of grinder herein illustrated is that disclosed in the above-identified Whitcomb patent and includes a casing 12 containing a grindstone carried by the shaft 14. Grinding pockets 16 are located on opposite sides of the grindstone and have plungers 17 operated by pistons in cylinders 18 for forcing the wood in the pockets against the rotating stone. Each pocket has an upstanding open-top wood-storage magazine or hopper 20 that is adapted to hold sufficient wood for one charge only of the grinding pocket. The hopper of each grinder is relatively long and narrow, its length being some small amount greater than the length of the logs it receives, and is disposed with its narrow end adjacent the trough so that the long axis of the hopper is parallel with the logs in the trough. A sliding door 22 forms a closure for the bottom of each hopper and is operated automatically upon the exhaustion of wood in a pocket to cause the charge of wood in the hopper to fall into the pocket. Thus the grinder operates automatically and it is only necessary for an attendant to maintain charges of wood in the hoppers. All of the grinders are associated with a trough 24 in which a supply of logs is constantly maintained and from which logs can be removed and deposited in the empty hoppers of the grinders. The trough is located between the two rows of grinders and is elevated thereabove on a framework 26 in such a position that the logs floating in the water in the trough are at a higher elevation than the open tops of the hoppers of the grinders. The trough is provided with converging side walls 28 at its entrance and communicates with a large storage pond 30 which at one end either contains a pile of logs 32 sufficient, for instance, for a day's supply of wood for the grinders, or has a chute 34 which continually discharges wood into the pond from some other part of the plant. Water from the pond flows along the length of the trough to the end thereof where the water passes over a dam 36 and escapes through an outlet conduit 38. An attendant at the head end of the pond keeps logs from the pile 32, or from the chute 34, moving in the direction of the entrance of the trough. A second attendant at the trough-entrance directs the logs into and along the trough. The trough is but

slightly greater in width than the length of the logs and the logs are floated into the trough transversely thereof, and float down the trough in this position. The trough is intended to be kept entirely filled with logs so that the logs thus keep their transverse positions. When the trough is full of logs, the foremost log comes to rest against the dam 36 and thus holds the line of logs stationary. When a log is removed from the line, however, the current in the trough, and the attendant at the entrance to the trough, moves down the logs above the gap caused by the vacated log, thereby to maintain the full supply of logs in the trough.

The trough is provided with sidewalks 40 that are carried by the framework 26 and extend along opposite sides of the trough so that an attendant can walk along the trough from grinder to grinder for maintaining the hoppers filled with wood. A chute 42 is located at each grinder-hopper and has its discharge end terminated at the top of the narrow end of the hopper adjacent the trough. The entrance-end of the chute is carried by a sidewalk and is elevated above the discharge end and is terminated close to a side wall 44 of the trough, there being a space between the chute and the side wall of the trough that is sufficient to permit passage of an attendant therebetween and is shorter than the length of a log. The side walls of the trough opposite the entrances of the hopper are provided with notches 46 so that the side walls, at the notches, are lower than the side walls between the hoppers of the series of grinders and are about in line with the bottom walls of the chutes so as to facilitate the traverse of the logs from the trough to the chutes. The trough is provided with bridges or platforms 48 which are located between the chutes of the pairs of grinders in the two rows and overlie the trough so that the attendant can cross from one sidewalk to the other and also stand above the logs in the trough when moving them into a hopper. The bridges are provided with railings 50 at the sides.

When an empty hopper is to be filled with wood the attendant stands upon the bridge adjacent the empty hopper and with a pick pole spears a log of wood adjacent the entrance to the chute of the empty hopper and raises the log out of the trough and through the notch 46 and into and down the chute 42 into the hopper. The bottom of the notch 46 is close to the surface of the water in the trough. The force with which the log is speared causes the log to sink into the water and then to spring upwardly above its normal floating position in the water, assisted by the lifting action of the attendant, so that the log can be raised, or bounced, out of the trough and shoved rapidly down the chute and into the hopper of the grinder with very little exertion as compared with the labor heretofore required to lift the log off the truck and into the hopper. The current in the trough and the attendant at the entrance to the trough sends down another log to occupy the space vacated by the withdrawn log so that there are always logs in position to be speared by the attendant and moved into the hopper of the grinder. When the hopper is full, the attendant moves along the length of the trough to another empty hopper and repeats the operation.

The emptying of the hoppers into the grinding pockets is automatically performed by the grinding machines, as has been explained heretofore, so that the only duty of the attendant is to keep the hoppers full of logs. With this system it has been found that one attendant can conveniently supply wood to twelve hoppers or six double grinders whereas with the system heretofore employed one workman could only supply four hoppers or two double grinders; and the labor of keeping the hoppers filled is relatively light, with the present system, as compared with the previous system.

I claim:

1. The method of conveying logs involving the use of a pond and a conduit forming an outlet of the pond, which method comprises storing a supply of logs in haphazard order in said pond and moving logs, as required, toward the entrance of the conduit, arranging the logs crosswise of the conduit and moving them as so disposed into the conduit, floating them down the conduit crosswise thereof by the current therein, withdrawing the logs lengthwise thereof from the side of the conduit and sliding them by gravity to an outlet, and stopping the foremost log from advance with the water current so that the current moves the logs one against the other and fills the gap between adjacent logs caused by the withdrawn log with another log.

2. The method of conveying logs to a wood grinder having a relatively long and narrow open-top hopper by the use of a pond and a conduit forming an outlet of the pond and extended in front of the narrow side of the hopper, which method comprises floating the logs in haphazard order in said pond and moving them toward the entrance of the conduit, arranging the logs crosswise of the conduit so that they are parallel with the long side of the hopper and moving them as so disposed into the conduit and floating them crosswise thereof by the current therein, moving logs lengthwise thereof out of the conduit over the side thereof and sliding them by gravity into the hopper, and stopping the foremost log from advance with the water current in the conduit so that the current moves the logs one against the other and replaces the withdrawn log by another log.

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