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INTERCHANGEABLE SPOUTING SYSTEM FOR AUTOMATIC MILLS

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FIG. 1.

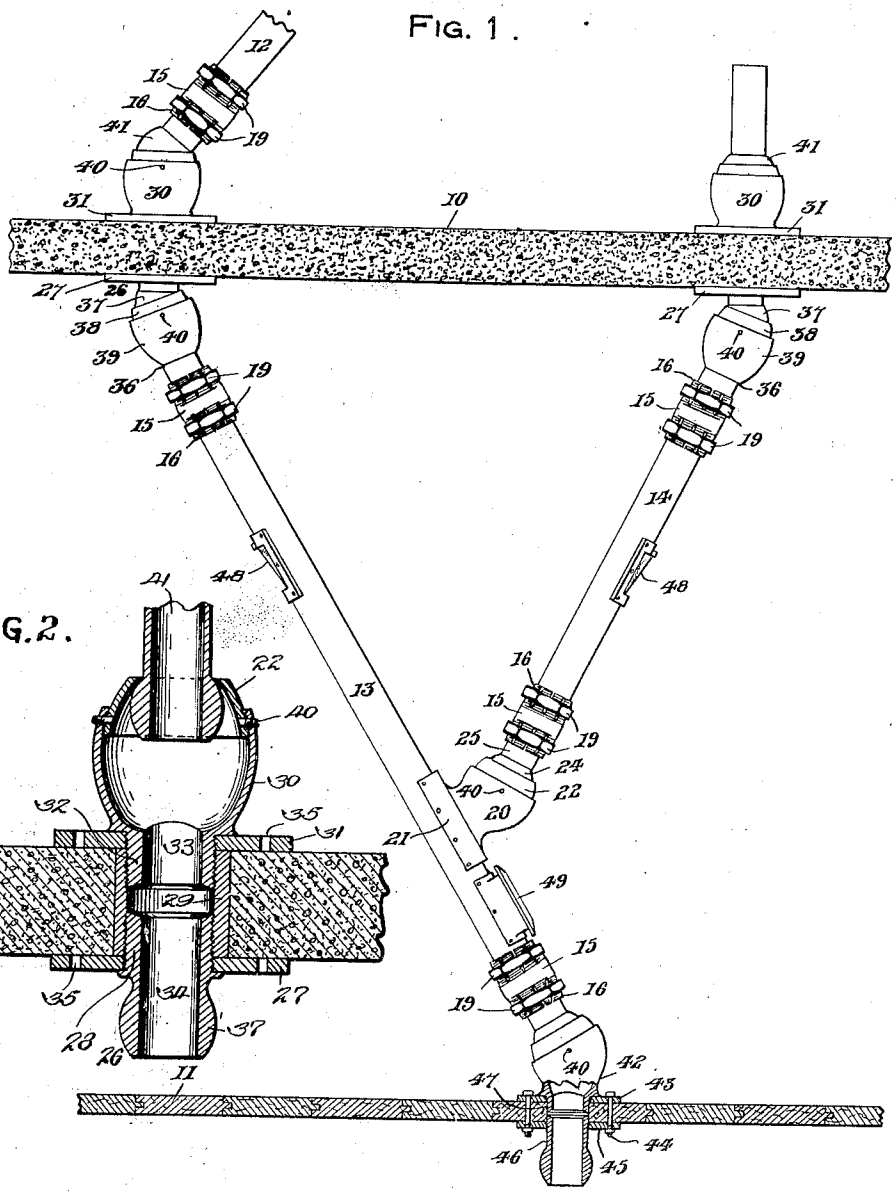

FIG. 2.

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INTERCHANGEABLE SPOUTING SYSTEM FOR AUTOMATIC MILLS.

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To all whom it may concern:

Be it known that I, NICHOLAS M. MILLER, a citizen of the United States of America, residing at Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Interchangeable Spouting Systems for Automatic Mills, of which the following is a specification.

The primary object of the invention is the provision of a system of piping or spouting serviceable in any manner of milling plant such as grain, flour, rice and spice mills for conducting the separated grades of the product to suitable points for packing or shipment, the construction being easy of installation and inexpensive to manufacture.

A further object of the invention is to provide a spouting system for graded milling products arranged in separable parts adapted for disassembling at will to be reassembled to effect different paths of travel for the products, the parts of the piping system being adapted for manufacture and sale to the trade as separate elements for ready assembly at the milling plant.

A still further object of the invention is the provision of interchangeable spouting for a mill having conducting and joint portions as well as sight and hand-hole members readily assembled in a mill and through the floors thereof by unskilled workmen, whereby the cost of installing a mill piping system is greatly decreased when considered with the decrease in price of the material comprising the system due to manufacture of the separate elements thereof in great quantities for selling in sets to the mill owners.

With these general objects in view the invention consists in the novel combination and arrangement of parts hereinafter more fully described in connection with the accompanying drawings and in which like reference characters designate corresponding parts throughout the several views,

In the drawing,

Figure 1 is an elevational view of my spouting system installed in a mill through the floors thereof with parts broken away,

Figure 2 is a sectional detail view showing the floor connection illustrated in Fig. 1 in connection with the concrete floor of the mill.

It being understood that my system of spouting or conducting pipe is serviceable in any form of mill or similar plant, wherein the spouting may be carried to any desired extent depending upon the size and condition of the mill, the invention will be described as an example or illustration of the system in connection with adjacent floors 10 and 11 of the mill, formed of concrete and wood respectively. In many mills graded milling products are produced by milling machines, each of which produces by separation different grades of product and my system is especially serviceable in selectively collecting the different grades of product from milling machines upon different floors of the mill and conducting the aggregated separate grades to convenient points for use or shipment.

Pipe sections or tubing such as 12, 13 and 14 are provided in different lengths for attachment together or to flexible connections by pipe connectors 15 in the form of sleeves having tapered threaded portions 16 adapted for tightening upon pipe sections by means of lock nuts 19. Ball and socket connections are provided between the piping such as 13 and 14 consisting of a socket casing 20 removably secured to a pipe such as 13 by an arcuate flange 21, a socket flange 22 being threaded within the open end of the casing 20 for engaging the ball portion 24 of a ball coupling having a stub pipe 25. The stub pipe 25 is attached to the adjacent end of the spouting or tubing 14 by one of said pipe connections 15 heretofore described.

Serviceable connections for the pipe at opposite sides of a floor are provided of slightly different forms for concrete and wooden floors as illustrated in detail in section in Figs. 5 and 1 respectively. The upper ends of the pipes 13 and 14 being both carried through the concrete floor 10 in an identical manner, the elements of such connection as illustrated in Fig. 5 will be referred to by similar reference characters. A ceiling connection or ball pipe 26 has a collar 27 threaded thereon with a threaded portion 28 of the ball pipe secured within

a threaded sleeve 29 firmly embedded within and extending through the concrete floor 10. A socket pipe 30 having a similar collar 31 threaded thereon is provided with a threaded portion 32 secured within the upper opposite end of the sleeve 29 bringing the bores 33 and 34 of the members 30 and 26 respectively in vertical axial alinement. Perforations 35 in the collars 27 and 31 are employed for tightening the ball and socket members upon the ends of the sleeve 29 with said collars closely engaging the opposite faces of the floor 10. One of the pipe connections 15 is provided for connecting socket pipes or joints 36 to the upper ends of the tubes 13 and 14 for mounting upon the ball portions 37 of the ball pipes 26 in a manner substantially the same as illustrated in Fig. 2. Socket flanges 38 are carried in threaded engagement with the casing portions 39 of the socket pipes 36 while lock screws 40 may be employed for preventing rotation of the flange portions of the socket pipes whenever desired.

Tubes such as 12 are connected to ball or stub pipes 41 above the floor 10 by the pipe connections 15 and it will be understood that the piping may be continued indefinitely through the mill by joining spout sections or tubes together in the manner described. In carrying the spouting through a wooden floor such as 11, the sleeve 29 may be omitted and a socket pipe 42 provided with a collar 43 threaded thereon above the floor 11 secured by bolts 44 to a similar collar 45 threaded to a depending ball or stub pipe 46, it being understood that the members 42 and 46 are in substantial axial alinement extending through a vertical opening 47 in the floor 11. It will be noted that all of the stub or ball pipes are preferably depending members whether carried by the floor connections or the tubing 12, 13 and 14 and being in position for clamping reception within the adjacent upwardly projecting cooperating socket pipes, the manner of effecting the connections having been fully described.

In connecting tubes such as 14 between the ceiling connections 26 and either floor connections or connections to other tubes such as 13, the ball and socket joints are readily positioned at the required angle and the tube sections brought into substantial end engagement with the opposite joint members whereby the pipe connections 15 may be readily clamped over the abutting members securing the spoutings together. It will be understood that it would be difficult to connect the spouting member by screw threads when assembling the system, and this is obviated by the pipe connectors 15. With the upper or ceiling joints connected, the flange portions such as 22 of the ball and socket joints are adjusted upon the ball members 24 drawing the tubes such as 12, 13 and 14 into their rigid positions. Upon the end faces of the tubes of the system I provide sight glasses 48 at suitable elevations to be readily viewed by workmen upon the floor beneath to ascertain whether the product is properly flowing through the tube, a removable hand-hole member 49 being provided upon the upper side of any tube such as 13 for ready removal to extract a quantity of the product flowing through the tube.

The cost of installing the spouting systems in a mill includes the cost of materials and also labor in making and assembling the spoutings, and the gist of my invention is the provision of means for saving considerable expense for both material and labor by manufacturing all of the separate elements of the system in large quantities for selling to mill owners who may readily install the same in a mill by the aid of the usual mill employees. The elements of the system such as the tubes as well as the joint connections may be formed of metal such as steel, fiber such as rubber, pasteboard or other material depending somewhat upon the kind of product derived from the mill. The system when installed has a neat and finished appearance providing dust tight means for conducting the product from the milling machines to desirable distance points readily viewable and sampled at the will of the operator. The tubes 12, 13 and 14 are easily and quickly disassembled for removing the pipe couplings 15 and the entire system may be again reconstructed by reassembling to conduct the products along different paths. The tube connections through the floors are also readily removable as will be evident from the foregoing description thereof while the socket casings 20 as well as the sight glass member 48 and hand-hole members 49 are readily attached from the tubes upon which they are mounted for replacing at different points upon the same or similar tubes whenever reassembling the system. My system will perfectly carry out the objects enumerated for my invention, and while the form thereof herein set forth is believed to be a preferable embodiment thereof, it will nevertheless be understood that changes may be made therein in proportion, size, material and details of construction without in any manner departing from the spirit and scope of my invention.

What I claim as new is:—

1. Ceiling and floor connections for mill spouting systems comprising ball and socket pipe members positioned in axial alinement through the floor, and collars threaded upon said members.

2. A floor and ceiling connection for spouting systems comprising a threaded

sleeve adapted for securing through a floor. ball and socket pipe members threaded within opposite ends of the sleeve, and tightening collars for said pipe members threaded upon the latter.

3. A ball and socket member for spouting systems comprising an arcuate flange adapted for attachment to a spout member, a casing carried by the flange, an annular arcuate member threaded in the outer open end of the casing, and a stub pipe having a ball portion at its free end positioned within said arcuate member.

In testimony whereof I affix my signature.

NICHOLAS M. MILLER.