No. 743,345. PATENTED NOV. 3, 1903.

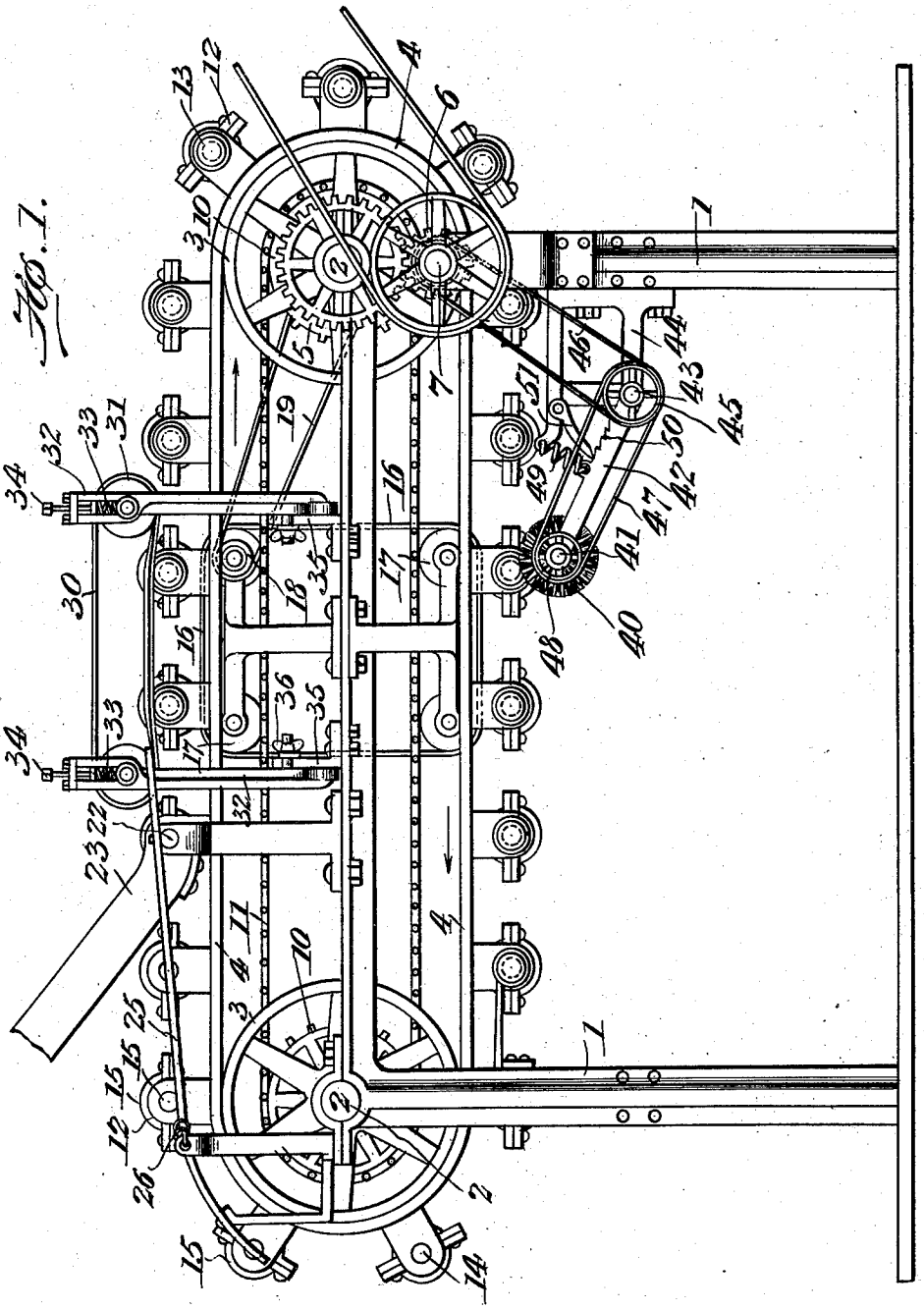
C. O. STRUTZ.

PIPE FINISHING MACHINE.

APPLICATION FILED JUNE 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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PIPE FINISHING MACHINE.

APPLICATION FILED JUNE 5, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

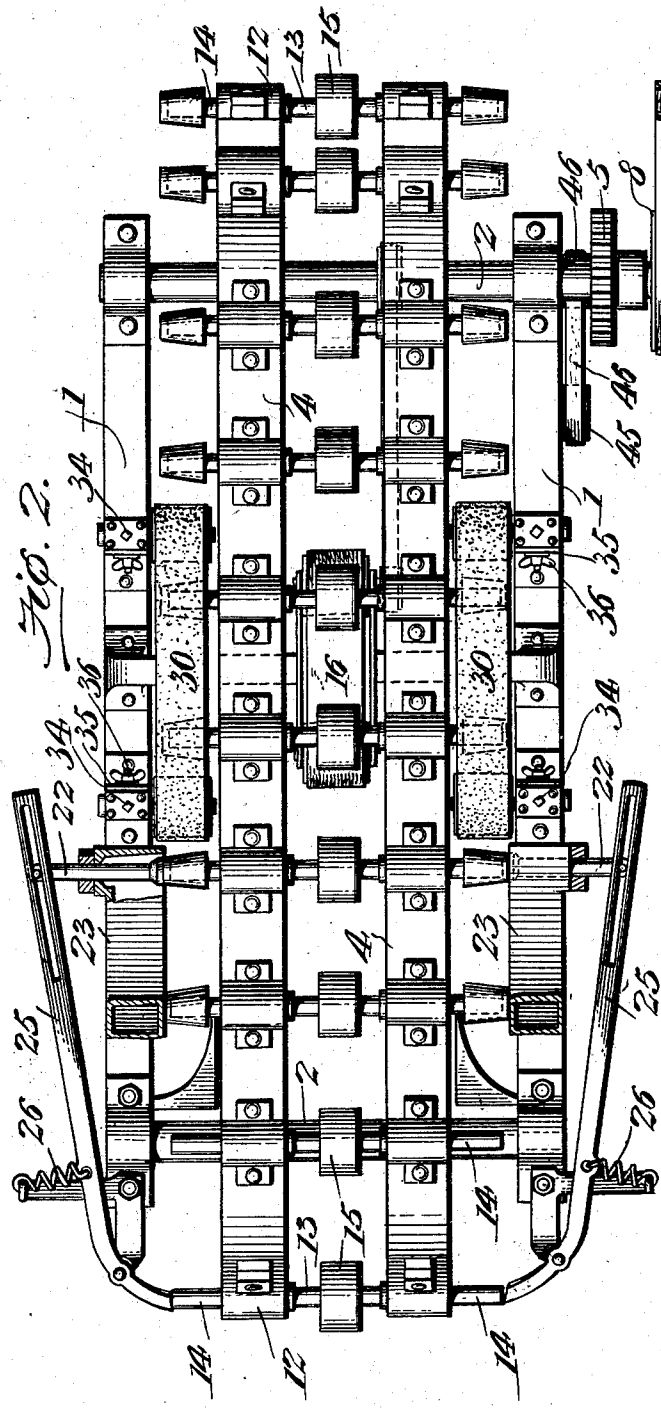
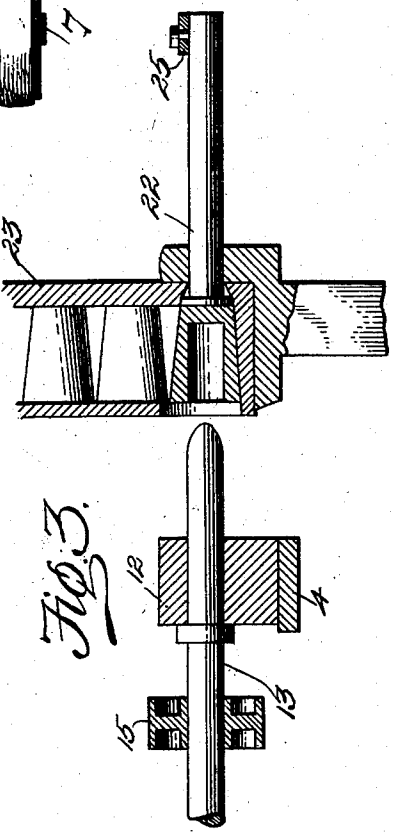


Fig. 3.



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No. 743,345. Patented November 3, 1903.

UNITED STATES PATENT OFFICE.

CHARLES O. STRUTZ, OF WASHINGTON, MISSOURI.

PIPE-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 743,345, dated November 3, 1903.

Application filed June 5, 1903. Serial No. 160,252. (No model.)

To all whom it may concern:

Be it known that I, CHARLES O. STRUTZ, a citizen of the United States, residing at Washington, in the county of Franklin and State of Missouri, have invented a new and useful Pipe-Finishing Machine, of which the following is a specification.

This invention relates to certain improvements in apparatus for the treatment of corncob pipes, and has for its object to provide means for finishing the outer surfaces of the pipes in order to produce a smooth surface and remove the remaining portion of the furry or soft material which clings to the pipe after the completion of the turning operation.

In the manufacture of corncob pipes the cobs are first sawed into lengths, then bored to form the tobacco-well, and, after tumbling to remove particles of the material still clinging to the surfaces of the pipe, are filled by placing the pipes in a solution of plaster-of-paris, which fills the pores. The pipes are then dried and after the drying operation are scoured, shellacked, and then slicked prior to the application of a second coating of shellac.

The present machine is designed especially for the purpose of scouring and slicking the pipes, the scouring operation being in the nature of a sandpapering or treatment by emery-cloth, while the slicking operation removes a portion of the first rough coat of shellac and prepares the pipe for the application of the second and finishing coat. This scouring, sandpapering, and slicking operation has heretofore been carried on exclusively by hand in the manufacture of corncob pipes, it being found impossible to employ machines for the purpose, and usually the pipe-blanks are placed in a lathe and while being turned subjected to the action of sandpaper or emery-cloth.

With these and other objects in view, as will hereinafter appear more fully, the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation. Fig. 2 is a plan view of the same. Fig. 3 is a transverse sectional elevation of a portion of the machine on the line 3 3 of Fig. 1.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The operating parts of the machine are supported on a suitable frame 1, having bearings for the reception of two parallel spaced shafts 2. On each of the shafts is secured a pair of belt-wheels 3, slightly spaced from each other. These wheels carry belts 4, formed of any suitable material, and in some cases link belts may be used and sprocket-wheels substituted for the belt-wheels. On one of the shafts is secured a gear 5, intermeshing with a pinion 6, and the pinion is carried by a shaft 7, to which is also secured a belt-wheel 8, driven from any suitable source of power. In order to obtain uniformity of movement without depending on the belts alone, each of the shafts is provided with a sprocket-wheel 10, and said sprocket-wheels are connected to each other by a suitable linked belt 11.

The belts 4 carry pairs of bearing-blocks 12 for the reception of spindles 13, which extend transversely across the machine and at their opposite ends are provided with mandrels 14 or are otherwise so shaped as to receive and support the pipes to be finished. To the central portion of each spindle is secured a friction-wheel 15, adapted to engage with a friction driving-belt 16, disposed approximately at a central point and held by a number of guiding-rollers 17, having supporting-shafts adapted to suitable bearings in the frame. One of the shafts carries a small pulley 18, connected by a belt 19 to a driving-pulley on one of the shafts 2, or this friction driving-belt may be moved at any desired speed necessary to properly accomplish the desired result. The friction-belt engages the successive friction-wheels 15, carried by the spindles, and rotates the same in order that the pipe may be subjected to the action of the sandpaper or emery-cloth, wire brush, or the like.

In order to properly feed the pipes to the

mandrels, a plunger 22 is arranged at each side of the machine, the inner end of each of said plungers being in alinement with the lower portion of a hopper or feed-chute 23, through which the pipes travel by gravity and as they successively come opposite the plunger are forced onto the mandrel. To reciprocate the plunger, I employ a slotted lever 25, the slotted end of which receives a pin projecting from the plunger, and the opposite end of said lever is arranged in the path of movement of the spindles or the mandrels carried by said spindles, so that each time a spindle or mandrel comes into engagement with the lever the plunger will be forced inward and move a pipe into engagement with a mandrel. The lever is normally held in retracted position by a spring 26, and it is only when the spindles engage with such lever that the movement of the pipe can occur. As the spindles are equidistantly spaced, the operation is regular and uniform.

The present machine is designed to effect the sandpapering of the pipes preliminary to the first coating of the shellac, and after the pores of the pipe have been filled with a solution of plaster-of-paris, this operation being termed "white scouring" in the art and serving to prepare the outer surface of the pipe for the shellac coating, the abrasive material—such as sandpaper, emery-cloth, or the like—is arranged in any suitable manner on a belt 30, passing over a pair of rollers 31, the spindles of said rollers being adapted to suitable bearings in bracket-arms 32 and normally held down into pipe-engaging position by means of springs 33, the stress of which may be adjusted by suitable set-screws 24. The lower ends of the brackets are pivoted to brackets 35 on the frame of the machine in order to permit adjustment of the belt to inoperative position, and when in operative position the parts are locked by means of thumb-nuts 36. During the operation of this portion of the mechanism the pipes fed to the mandrels are gradually carried along until they encounter the movable belt of abrasive material, and at this time the friction-wheel on each sleeve comes into engagement with the traveling friction-belt 16, and the pipe is rotated during its passage under the abrasive belt. As the belt-supporting rollers 31 are held in place by springs, they are allowed to move in order to permit the belt to accommodate itself to pipes of varying diameter, and there will be little or no difference in the action of the belt on such pipes. When not in use, the thumb-screws 36 may be released and the brackets allowed to assume a horizontal position or otherwise adjusted to move the abrasive belt out of the path of movement of the pipe-carrying mandrels.

This machine is also designed for the purpose of slicking the pipes, this operation occurring in advance of the second and final coating of shellac and is for the purpose of removing any surplus shellac or other material and forming a smooth surface on the pipe in order that the final shellac coating may be uniform. This slicking operation is accomplished by means of a brush 40, mounted on a suitable shaft or arbor 41, said shaft or arbor being carried by an arm 42, pivotally mounted on a shaft 43, adapted to suitable bearings in a bracket 44. The shaft 43 carries two pulleys, (indicated at 45,) one of said pulleys being connected by a belt 46 to a belt-wheel on the shaft 7 and the other being connected by a belt 47 to a belt-wheel 48 and brush-carrying shaft, so that said brush may be rotated at any desired rate of speed in order to act upon the pipes as they are moved by the endless carrying-belts. The arm 42 is normally held in elevated position by means of a spring 49, so that it may yield when large pipes are passing and maintain a practically uniform pressure on the pipes without regard to the size. Should it be desired to move the brush out of operative position, it is simply depressed, and one or other of the teeth of the rack 50 on said bar will engage a pawl 51, carried by the frame, and thus serve to lock the brush out of position.

In order to effect the automatic removal of the pipes from the mandrels or spindles, I employ stationary cams 52, arranged in the path of movement of the mandrels and serving to gradually force the pipes outward until they fall into a suitable receptacle or until they are received within a hopper or chute and conveyed to another machine for a subsequent operation.

The machine may be employed for either the white scouring or slicking operations and either of the abrasive or polishing elements adjusted out of operable relation when necessary, or in some cases the pipes may be acted upon by both the abrasive belt and the slicking-brush.

Having thus described the invention, what is claimed is—

1. In a device of the class specified, an endless carrier, mandrels carried thereby, means actuated by the mandrels for automatically feeding successive pipes to the mandrels, means for revolving the mandrels, and abrasive devices arranged in the path of travel of said mandrels.

2. In a device of the class specified, an endless carrier, mandrels carried thereby, means for automatically feeding pipes to the mandrels, and a pair of pipe-finishing devices, each independently adjustable into and out of the path of movement of the mandrels.

3. In a device of the class specified, an endless carrier, mandrels supported thereby, a pair of pipe-finishing devices, means for adjusting such devices into and out of operative position, a friction-wheel carried by each of the mandrels, and a friction driving-belt for engaging said friction-wheels and revolv-

ing the same while the pipes are being operated upon by the finishing devices.

4. In a device of the class specified, a pair of belts, bearing-blocks carried thereby, spindles adapted to the bearing-blocks, mandrels on said spindles, means for feeding the pipes to the mandrels, means for stripping the pipes from said mandrels, and abrading-surfaces adapted to engage with the pipes.

5. In a device of the class specified, a pair of belts, bearing-blocks carried thereby, spindles carried by the blocks, mandrels on said spindles, means for feeding the pipes to the mandrels, means for stripping the pipes from the mandrels, abrading-surfaces in the path of movement of the pipes, and means for rapidly revolving the mandrels during the action of the abrading-surfaces.

6. In a device of the class specified, a pair of spaced shafts, belt-wheels carried thereby, a pair of parallel belts on the wheels, bearing-blocks carried at equidistant intervals by the belts, spindles adapted to the bearing-blocks, mandrels arranged at the opposite ends of the spindles, a sprocket and chain connection between the two for insuring uniformity of movement, a pipe-feeding device, a pair of pivoted brackets, spring-held rollers carried thereby, an abrading-belt passing over the rollers, and means for locking the brackets in position, substantially as specified.

7. In a device of the class specified, a movable carrier, pipes supporting means thereon, a revoluble brush adapted for contact with the pipes, a pivoted arm carrying the brush, rack-teeth on the arm, a spring for supporting said arm, and a pivoted pawl for engaging the rack-teeth and locking the arm in adjusted position.

8. The combination with a carrier, of pipe-receiving mandrels carried thereby, a hopper or chute, and a reciprocatory plunger for moving the pipe from the hopper or chute to position on the mandrel.

9. The combination with an endless carrier, of a plurality of pipe-receiving mandrels on said carrier, a pipe-chute, a plunger for engaging the pipes and moving the same to position on the mandrel, and a lever carrying the plunger, one end of said lever being disposed in the path of movement of the mandrel, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES O. STRUTZ.

Witnesses:

C. WARRENER,

JNO. E. PARKER.