(No Model.)

J. MURPHY.

MILL FOR PRESSING CANE, &c.

No. 346,493. Patented Aug. 3, 1886.

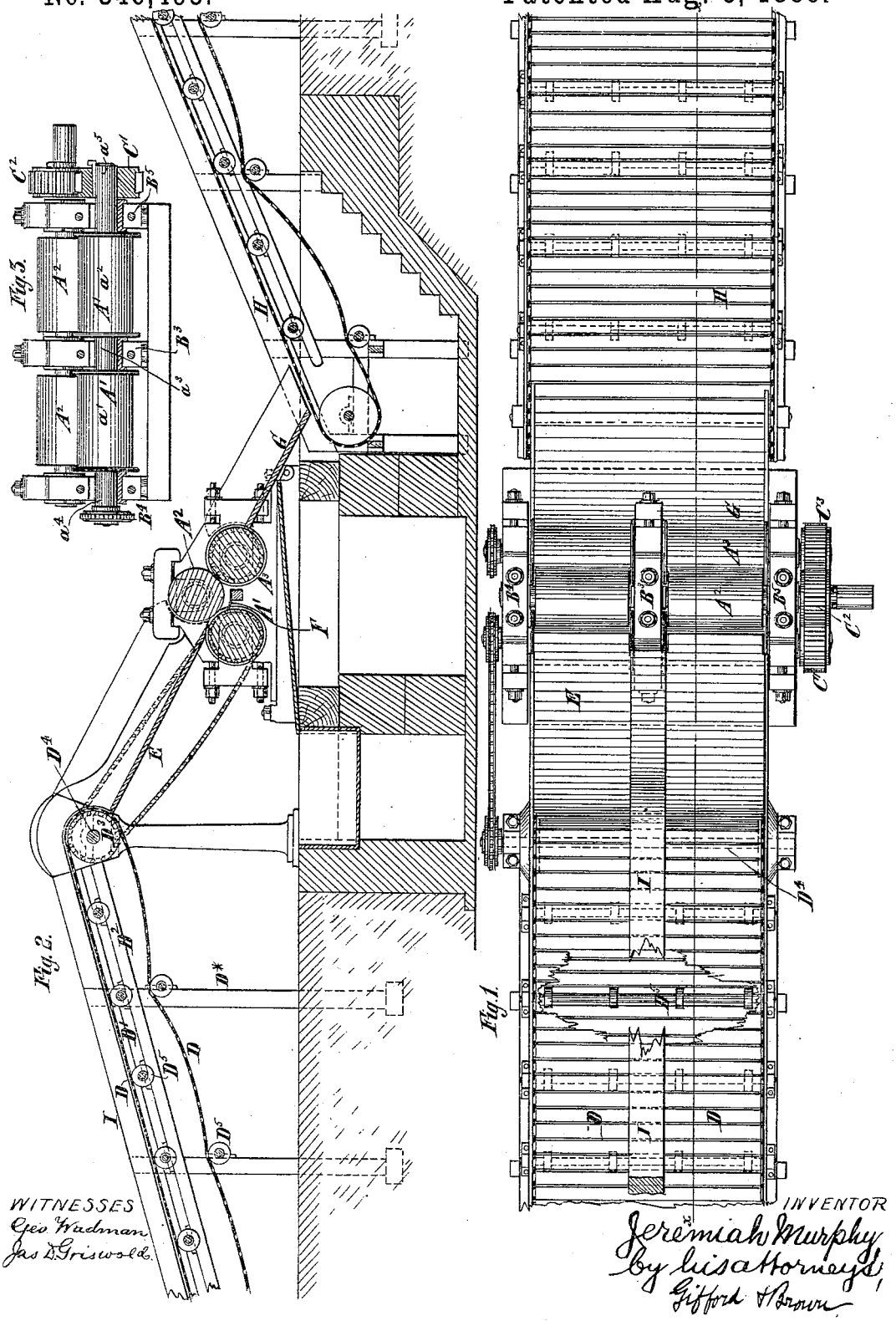

Fig. 3.

Fig. 2.

Fig. 1.

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JEREMIAH MURPHY, OF BROOKLYN, NEW YORK.

MILL FOR PRESSING CANE, &c.

SPECIFICATION forming part of Letters Patent No. 346,493, dated August 3, 1886.

Application filed September 18, 1885. Serial No. 177,489. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH MURPHY, of Brooklyn, in Kings county and State of New York, have invented a certain new and useful Improvement in Mills for Pressing Cane and Like Substances, of which the following is a specification.

My improvement relates particularly to mills for use in treating sugar-cane and like substances. It has been regarded as desirable for some time past to make the rolls of such mills of considerable length. In order to afford them sufficient strength, when long, they have been made large in diameter. Although a gain was expected from the extra length, the expectation was not realized. The rolls have always sprung more or less, and in that way have become impaired in effectiveness. The increase in the diameter of the rolls has given them a more extended bearing-surface on the cane, and their force being therefore distributed over more surface has resulted in a smaller percentage of yield, and also has had a tendency to convert the bagasse into a spongy condition, adapted to retain much juice. The increase of power necessary to the operation was expended to no useful purpose, and hence was wasted.

The object of my improvement is to produce a mill in which long rolls may be used without any of the objections above enumerated.

In the accompanying drawings, Figure 1 is a plan of a mill embodying my improvement, certain parts being broken away the better to exhibit the construction. Fig. 2 is a vertical section of the mill, taken at the plane of the broken line $x\,x$, Fig. 1. Fig. 3 is a front view of the rolls of the mill.

Similar letters of reference designate corresponding parts in all the figures.

$A'\,A^2\,A^3$ designate three rolls, two of which, $A'\,A^3$, are shown as arranged in the same horizontal plane, and the other of which, A^2, is arranged a little higher and opposite the space between the rolls $A'\,A^3$. These rolls $A'\,A^2\,A^3$ severally comprise sections $a'\,a^2$, journals a^3, intermediate of the sections, and journals $a^4\,a^5$ at the outer ends of the sections. All the component parts of each roll are rigidly secured together, preferably by making them integral. The journals $a^3\,a^4\,a^5$ are received in bearings supported by standards or pillow-blocks $B^3\,B^4\,B^5$. The journals a^5 of the rolls have gear-wheels $C'\,C^2\,C^3$ affixed to them. Through the intermeshing of these gear-wheels the rolls are caused to rotate in unison.

D designates an endless carrier, whereby cane designed to be subjected to the action of the rolls will be fed forward. This carrier consists of a number of slats made of wood or other suitable material secured at the ends to chains or bands. The chains or bands and the ends of the slats of this carrier travel along guides D', arranged on frames D^2, which are erected on posts D^*, and pass around wheels D^3, affixed to a shaft, D^4, journaled in the frames D^2. The carrier will in the same way pass around other wheels like the wheels D^3, and preferably also over guide-pulleys D^5, where necessary. Motion may be imparted to the carrier by a chain or belt passing over an appropriately-formed wheel on the journal a^4 of the roll A' and a similar wheel on the shaft D^4. The carrier conveys the cane up an incline and then delivers it onto a chute, E, that descends at an incline to a point opposite the adjacent surfaces of the rolls $A'\,A^2$. The cane passing between the rolls $A'\,A^2$ drops onto a guide, F, and thence it passes between the rolls $A^2\,A^3$. Leaving the rolls $A^2\,A^3$, the bagasse or waste cane-stalks drop onto a downwardly-inclined chute, G, and slide thence onto an endless carrier, H, whereby they will be conveyed away. The carrier H consists of slats fastened at the ends to chains or bands, and passes along guides around wheels and over guide-pulleys in a well-known manner. The carrier D, whereby the cane to be treated is fed toward the rolls, corresponds in width to the distance between the outer ends of the sections of the rolls $A'\,A^2\,A^3$; hence it feeds cane to the rolls throughout the entire length of their sections. Over the ascending part of the carrier D a guide, I, is arranged. It corresponds approximately in position and width with the standard B^3, by which the journals a^3 of the rolls are supported. This guide I also extends down over the chute E and close to the standard B^3. I may make this guide of metal and support it at one end from the standard B^3 and at the other end by any suitable means. The guide I directs the cane conveyed

by the carrier D to the sections a' a^2 of the rolls A' A^2 A^3, and prevents it from passing over the standard B^3. It will be understood that the single carrier D and chute E feed the cane to all the sections of the rolls A' A^2.

By my improvement I am enabled to use rolls of any desirable length without making them objectionably large in diameter. I can thus obtain the best results with long rolls and secure all advantages that result from performing a great amount of work by one set of rolls—as, for instance, economy in the first cost of the machinery as compared with two or more separate machines performing the same amount of work, and saving of power required for the work. My improvement, in fact, enables me to reduce the rolls diametrically to a minimum, owing to the bearings which I provide for them intermediate of their ends. This also enables me to arrange the rolls A' A^3 with their axes closer together than otherwise would be possible, and thus to reduce the distance the bagasse is obliged to travel while under pressure. This last point alone effects a considerable saving in power. There is a saving of power, of course, due to employing a single carrier to feed the cane to the rolls.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with rolls severally comprising a number of longitudinal sections, of bearings for the rolls intermediate of their ends, a chute for conducting material to be treated to the rolls, and a guide extending over the chute to the intermediate bearings for the rolls, substantially as specified.

2. The combination, with rolls severally comprising a number of sections, of bearings for the rolls intermediate of their ends, a chute for conducting material to be treated to the rolls, a carrier for conveying the material to the chute, and a guide extending over the chute and carrier to the said intermediate bearings for the rolls, substantially as specified.

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