(No Model.) 2 Sheets—Sheet 1.

H. G. DUNLAP.

MACHINE FOR SPLITTING THE ENDS OF CANE.

No. 489,225. Patented Jan. 3, 1893.

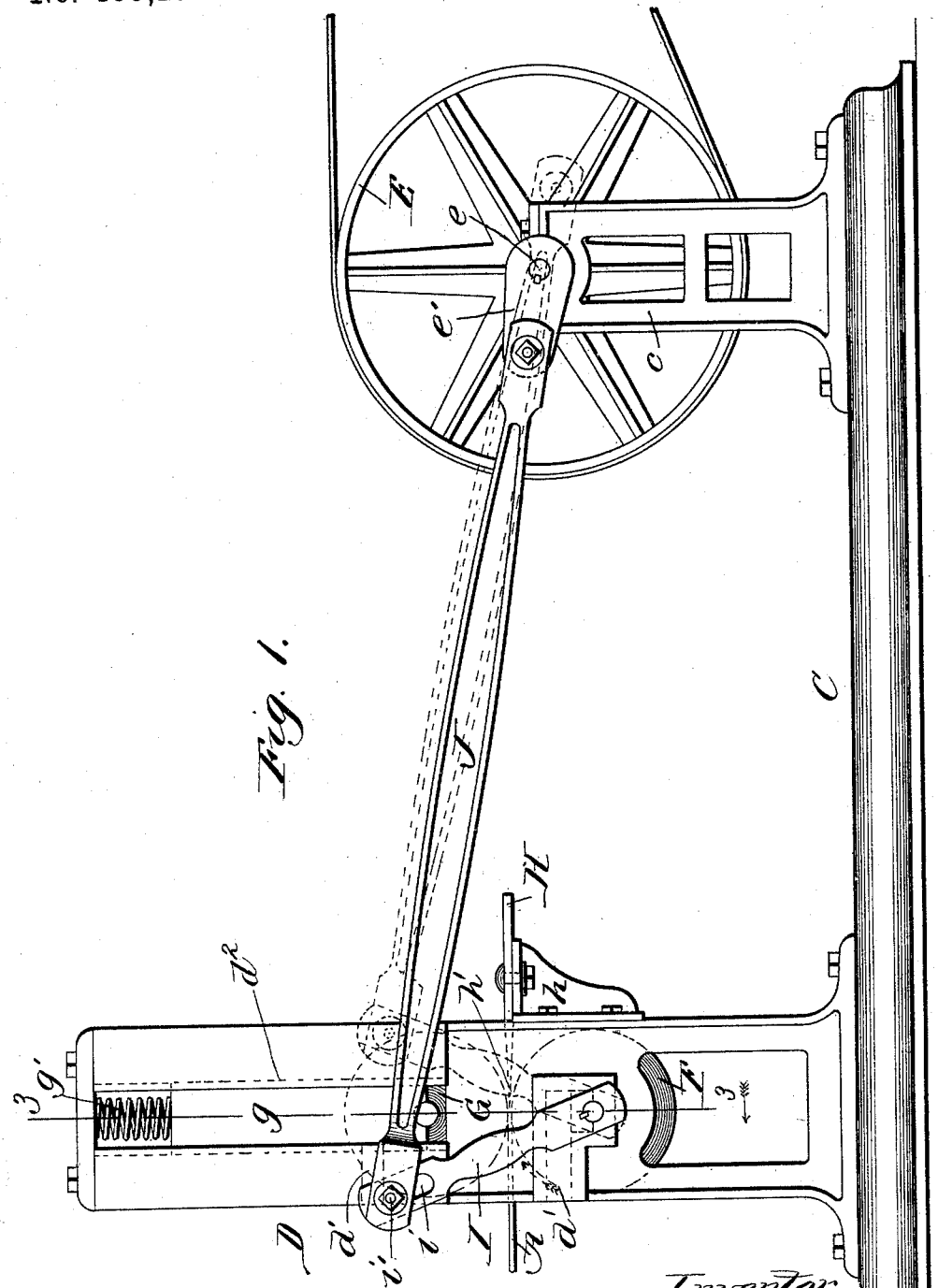

Fig. 1.

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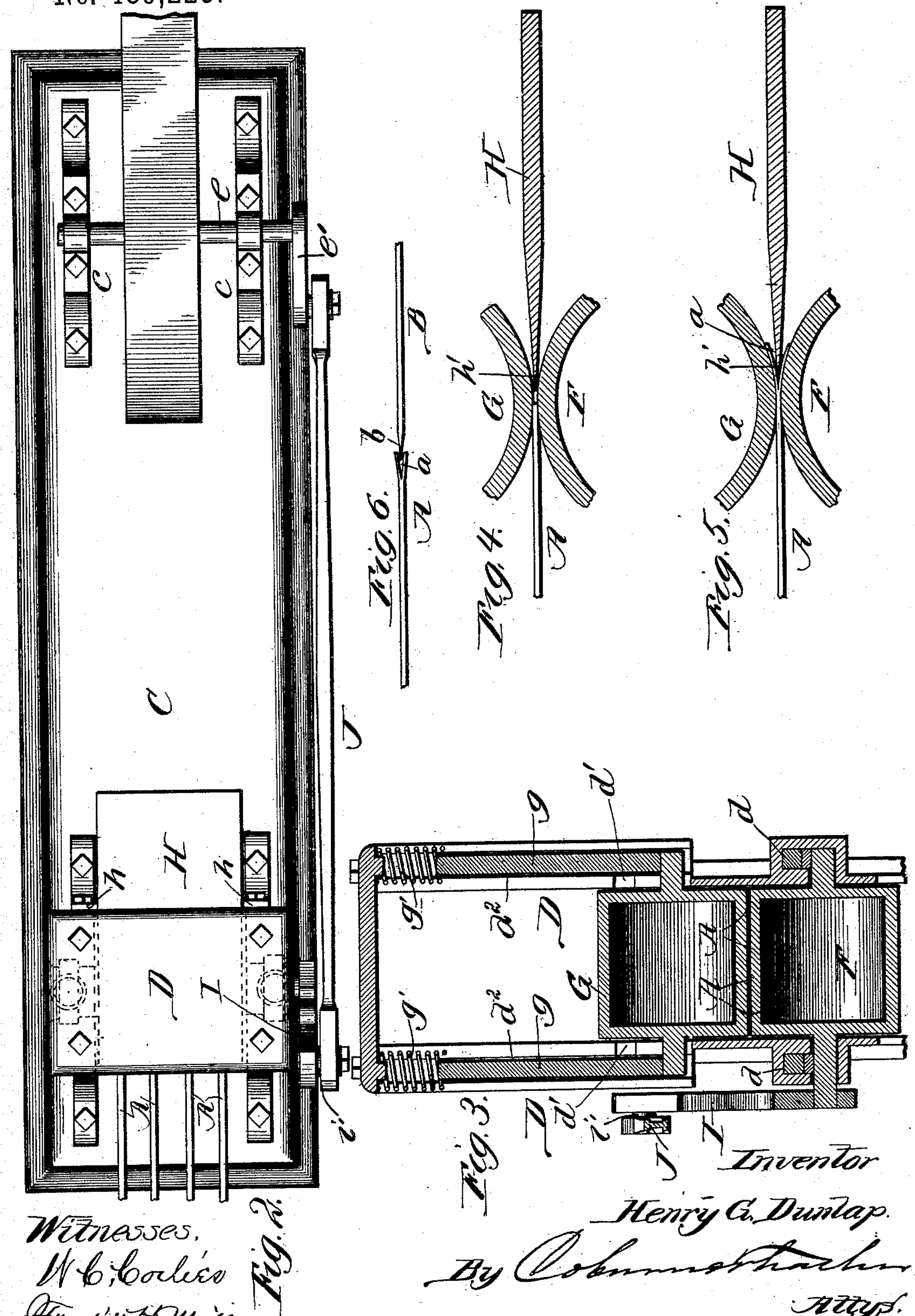

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SPLITTING THE ENDS OF CANE.

SPECIFICATION forming part of Letters Patent No. 489,225, dated January 3, 1893.

Application filed December 12, 1891. Serial No. 414,802. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. DUNLAP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Splitting the Ends of Cane, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a machine embodying my invention; Fig. 2, a plan view of the same; Fig. 3, a vertical section, taken on the line 3, 3, of Fig. 1, looking in the direction of the arrow thereon; Fig. 4, a detail section, showing the splitting devices with a strand of cane just entering; Fig. 5, a similar view at the completion of the forward or operative movement of the devices; and Fig. 6, a detail side elevation of two strands of cane prepared for union. Figs. 1, 2 and 3 are on one scale; and Figs. 4, 5 and 6 upon another and enlarged scale.

The bottoms of cane seated chairs are now largely made by machinery under a mode of operation which is usually known as "weaving." In this manufacture it is necessary to have practically continuous strips or strands of cane for what corresponds to the warp in ordinary weaving. These long strands are obtained by securely fastening together the usual short strands of the market at their ends. This is done by splitting the ends of one strand, shaving down the end of another strand, inserting in the strip of the former and gluing the two together. Heretofore the splitting of the ends of the strands of cane has been done by hand, and this hand work is not only objectionable because somewhat slow, but also because of frequent imperfections in the joints, owing to defects in splitting, resulting in great lack of uniformity with roughness and projections.

My invention relates to a machine for doing this work of splitting the ends of strands of cane by mechanical devices, whereby the ends of the strands are always divided evenly and uniformly, thus remedying the defects in hand work.

I will now describe in detail the construction and operation of a machine in which I have embodied my invention in one practical way and will then point out more definitely in claims the particular improvements which I believe to be new and wish to secure by Letters Patent.

In the drawings Fig. 6 illustrates the way in which the adjacent ends of strands of cane are prepared for union. The one strand, A, is split a little way in at one end, so as to provide a short slit, *a;* the other strand, B, has the adjacent end shaved down or beveled practically to an edge, and this beveled end, *b*, it will be seen, is adapted to be inserted in the split end of the adjacent strand. Before this insertion the end of the strand is supplied with glue so that when in place the two ends are firmly fastened together.

It is the purpose of my invention to provide a machine to make the slits, *a*, in the ends of the cane strands. The essential features of my machines are a splitting knife, mechanism for feeding the ends of the strands to the knife and mechanism for operating the feeding device, first forward the short distance required to make the split and then backward to withdraw and liberate the split strands. The machine for this purpose, illustrated in the drawings, consists of a suitable bed piece, C, at one end of which is an upright frame, D, and at the other a somewhat shorter frame, *c*, in which is mounted a band-wheel, E, the shaft, *e*, of which is provided with a crank, *e'*. In the frame D, opposite to this band-wheel, there is mounted a pair of rollers F and G. The journals of these rollers are mounted in suitable bearings in the side pieces, *d*, of the upright frame and these side pieces have openings, *d'*, cut inward from their outer edges to the bearings so that the rollers may be readily removed and replaced, as desired. The upper roller G is allowed a slight vertical movement, to accomplish which the upper part bearings, *g*, of its journals are set in guide ways in the side uprights of the frame which are provided with slots, d^2, for this purpose; and above these movable bearings are springs, *g'*, which hold the upper part bearings in place, but at the same time permit them to yield vertically. On the inside of the upright frame D is a knife, H, mounted on suitable supports, *h*, arranged horizontally and extending across the

frame, being in width about equal to the length of the rollers. This knife is adjusted, so that its edge, *h'*, extends in between the two rollers just about to the plane of their common vertical diameter. The blade is also set so that its edge will be just a little above the surface of the lower roller F, leaving a narrow space between the two equal to about half the thickness of cane strands as they are prepared for the market. Obviously if the end of a cane strand is presented to the rollers and the latter are given a short movement in a direction to produce a feed inward, the end of the strand will be carried thereby in against the knife edge and so be evenly split, the upper roller G yielding to accommodate this movement. It is also obvious that this inward movement of the rolls must be of short duration and then must be reversed to release the split strand. In order to obtain these movements a crank-arm, I, is fastened to one of the journals of the lower roller F. This arm is connected by a pitman or connecting rod, J, with the crank *e'* of the band-wheel. But the crank-arm I is very much longer than the crank arm *e'* of the band-wheel, so that the one revolution of the latter will produce only a vibratory movement of the former in a well-known way. Now these devices being in the position shown in full lines in Fig. 1 with the crank *e'* at the point of its greatest inward throw, it is evident that the continued movement thereof will move the crank-arm I inward until the crank *e'* reaches the point of its greatest outward throw, this position being shown in dotted lines in said figure; and then the further movement of the crank-arm *e'* during the remaining half of its revolution will carry the arm I back again to its outward position, from which it started. Now it is obvious that this vibration of the crank arm I inward, will turn the lower roller F inward as indicated by arrows in Fig. 1, thus producing an inward feed for anything placed in the bite of the rollers; that this movement will continue until the parts reach the position shown in dotted lines in Fig. 1 and that then it will be reversed, producing an opposite or outward feed of the rollers.

The rollers and knife are of such dimensions that a number of strands of cane can be split at the same time. In operation these strands A are placed upon a suitable table or support and their ends set into the opening between the rollers, when the latter being put in motion as described the ends of the strands are carried inward and are split by the knife and are then immediately discharged by the reverse movement of the rollers. This operation is illustrated in Figs. 4 and 5, in the former of which the strand of cane is shown in position just as the feed movement of the rollers is to begin, while in the latter it is shown just as this movement has been completed and the split in the end of the strand has been made and the reverse movement of the rollers is about to take place. In this operation the ends of the strands are split equally and uniformly, so that uniform and smooth joints are readily obtained in connecting the strands as already explained and illustrated in Fig. 6 of the drawings. It will be seen that in order to always secure the satisfactory working of the machine, it will be desirable to provide some means for regulating the movement of the rollers. This may be accomplished in various ways; in the drawings I have shown the long crank-arm I provided with a slot, *i*, in its outer end and the pin, *i'*, by which the pitman J is connected to this arm is adjustable back and forth in this slot, whereby it is evident that the throw of the arm may be nicely regulated and so the oscillatory movement of the rollers accurately adjusted.

I do not wish to be understood as confining my invention to the particular devices for oscillating the rollers, which have just been described, for it is evident that there are other well-known mechanical devices, by which the same movement of the rollers can be produced, and I contemplate the employment of any well-known device that will produce this movement. It will also appear that the main feature of my invention may be carried out with some other feed device than the rollers here shown. Any feed device which will properly hold the strands of cane and which at the same time may receive a reciprocating movement to carry the ends of the said strands up to the action of the knife and then back again may be employed, instead of the rollers, though I prefer the latter as being especially well adapted to this purpose.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a machine for splitting the ends of cane strands, a stationary knife, in combination with a feeding device, adapted to clasp the ends of the cane strands and carry them forward against the knife, and mechanism whereby a reciprocating movement is given to the feeding device to carry the ends of the strands up to the action of the knife and then in the reverse direction, substantially as described.

2. In a machine for splitting the ends of cane strands, a pair of feed rollers, in combination with a stationary knife arranged with its edge near the common diameter of the rollers, and mechanism whereby an oscillatory movement is positively imparted to said rollers, first to feed the ends of the strands to the knife and then to retract them therefrom, substantially as described.

3. In a machine for splitting the ends of cane strands, a stationary knife H, in combination with the feed rollers F and G, the crank arm I fastened to the journal of one of said rollers, a revolving crank *e'* much shorter than the arm I, and a pitman J connecting the said arms, substantially as described.

4. In a machine for splitting the ends of cane strands, the band or driving wheel E provided with a crank e', in combination with the lower feed roller F, a long crank arm I fastened to the journal of said roller, the upper feed roller G mounted in bearings yielding vertically, the stationary knife H, and the pitman J connecting the crank arms I and e', substantially as described.

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Witnesses:
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