

(No Model.)

4 Sheets—Sheet 1.

I. A. KERR.

SLAT WEAVING MACHINE.

No. 354,707.

Patented Dec. 21, 1886.

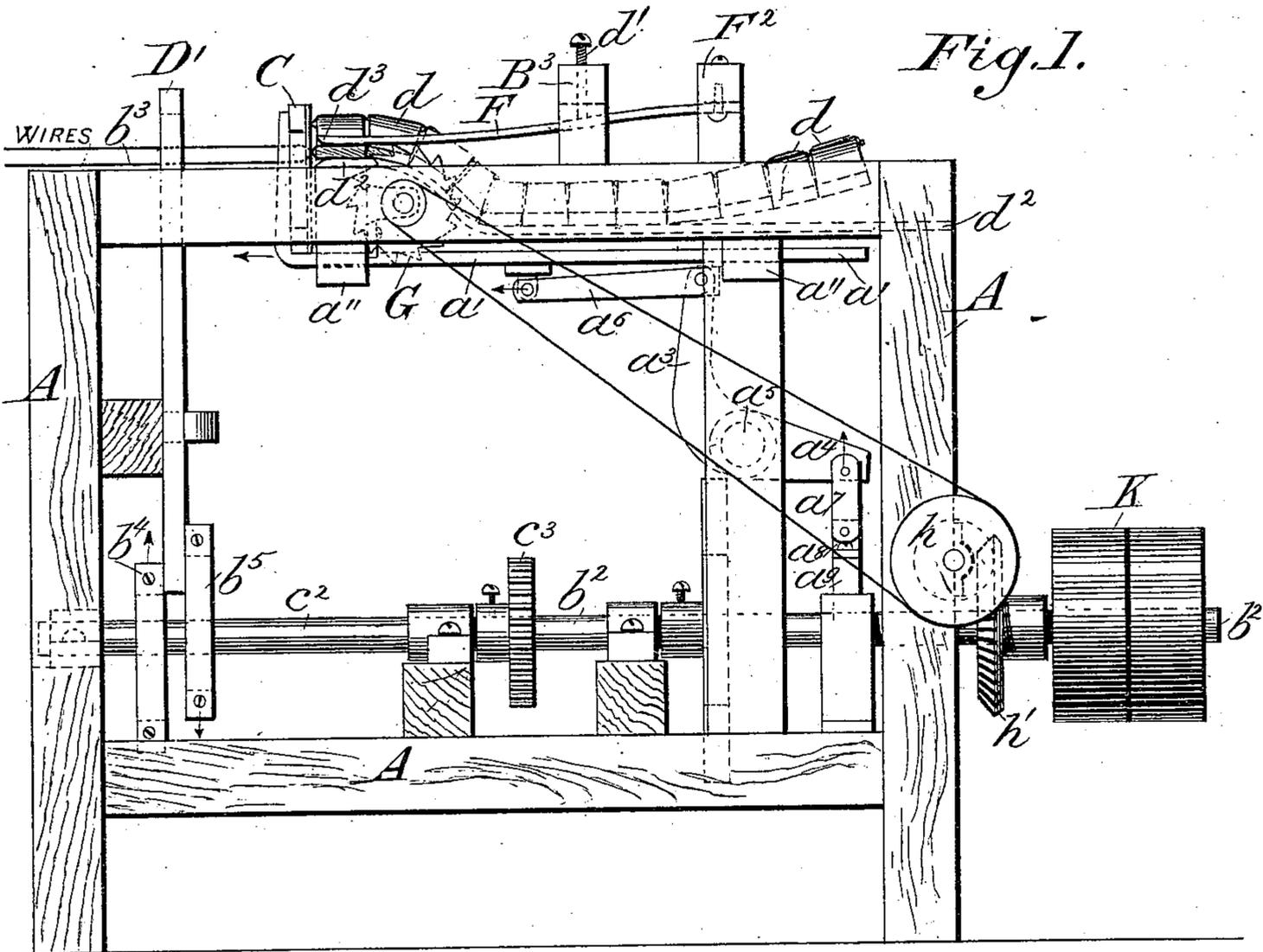


Fig. 1.

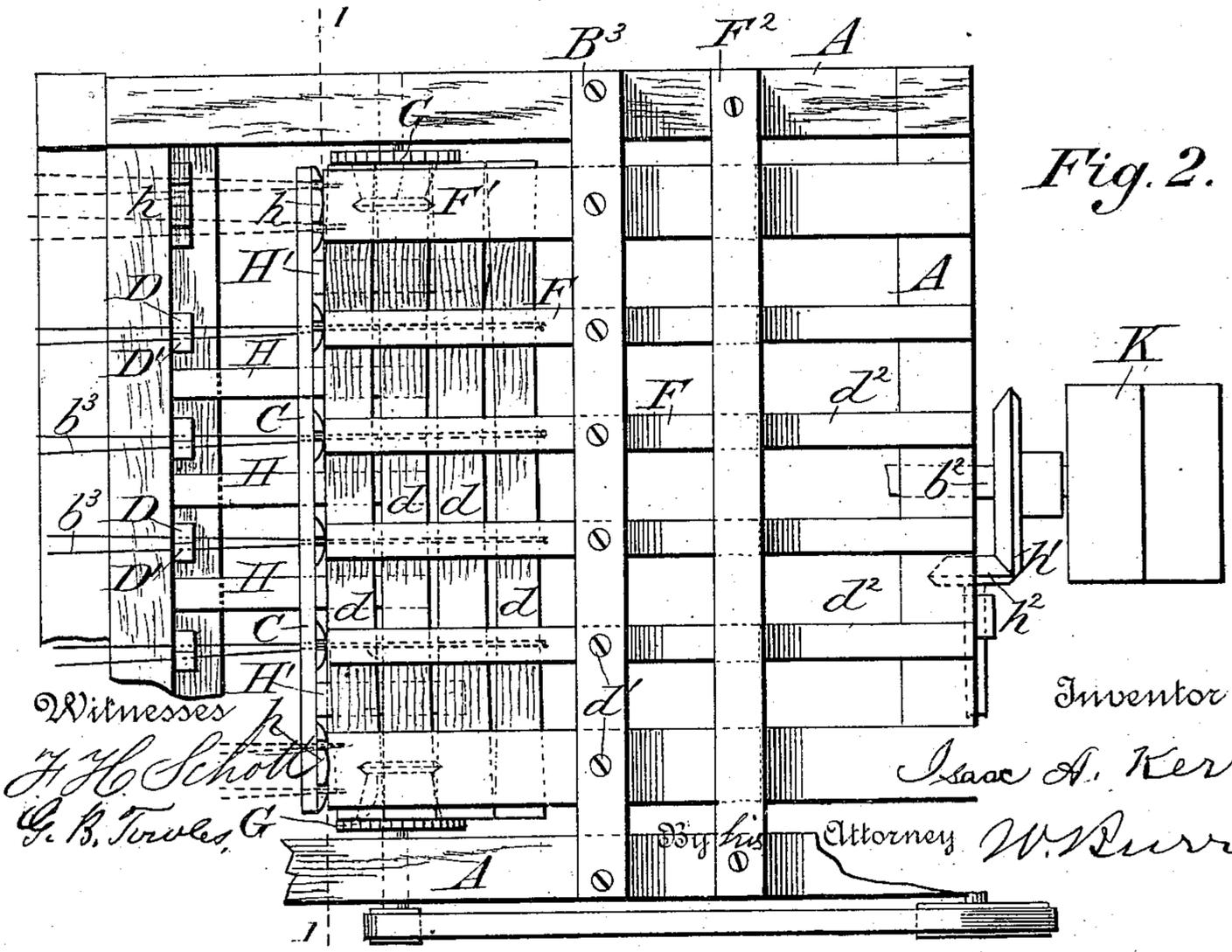


Fig. 2.

Witnesses
H. H. Schott
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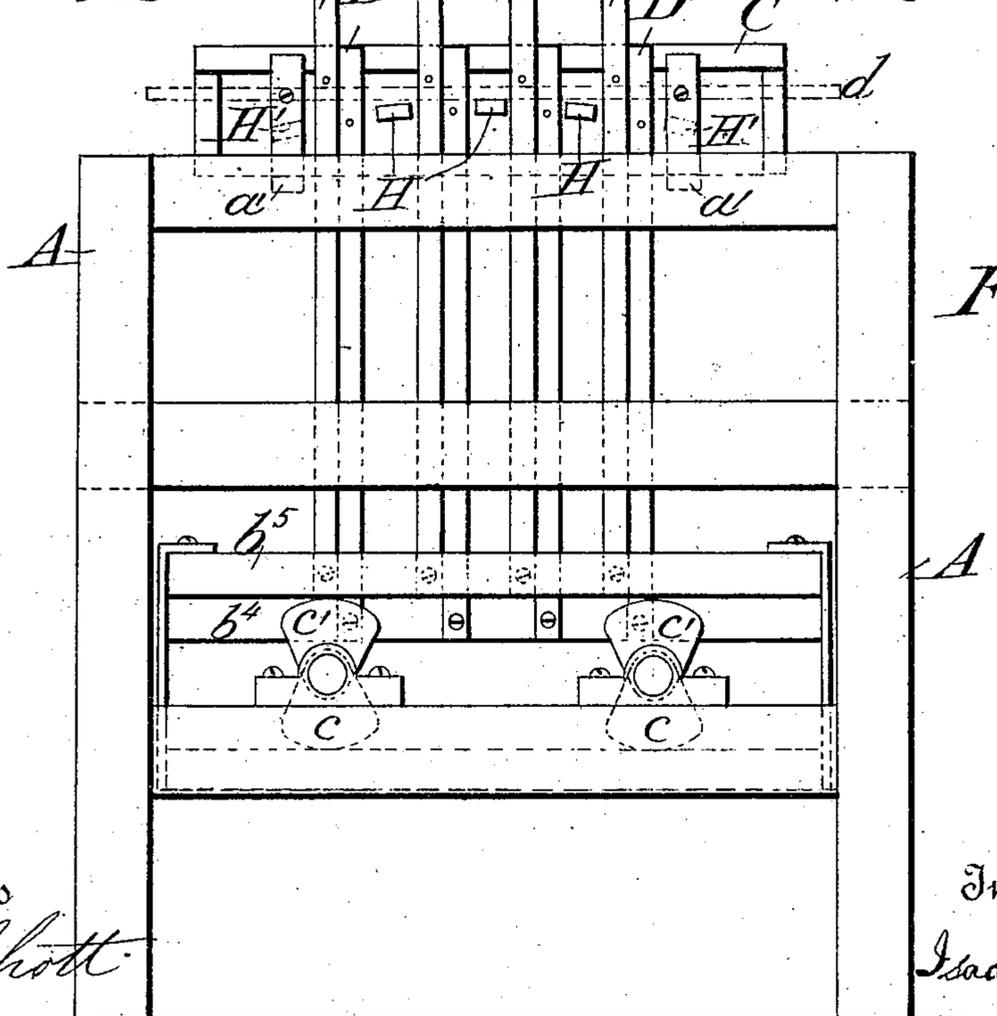
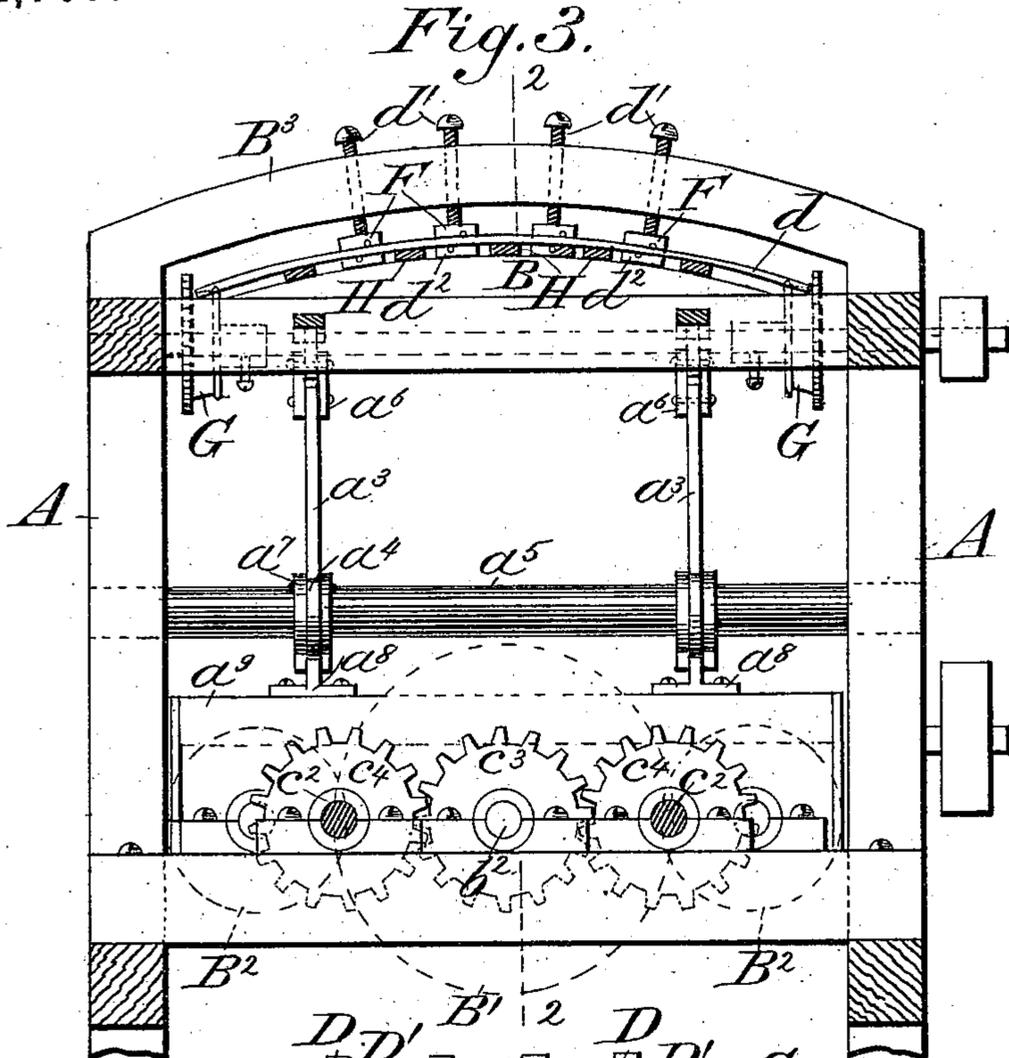


Fig. 4.

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Fig. 5.

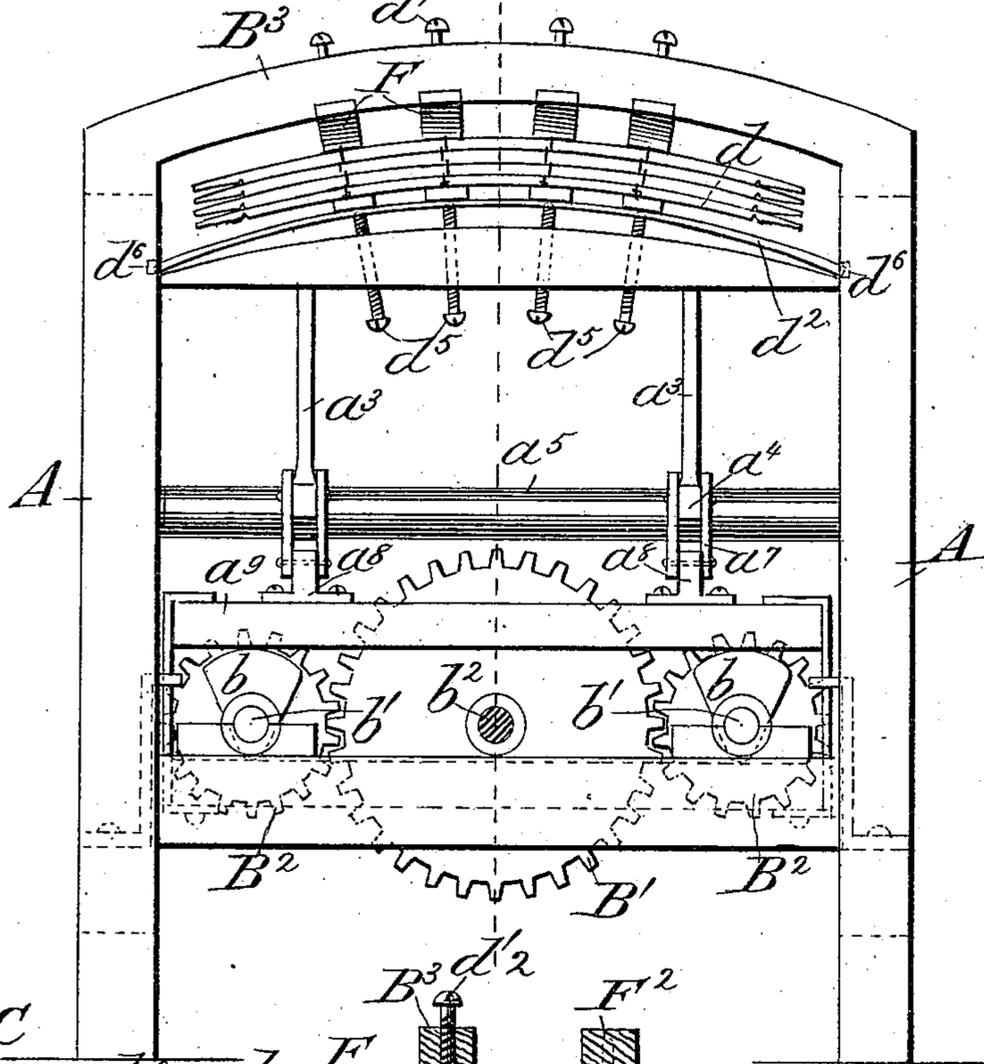
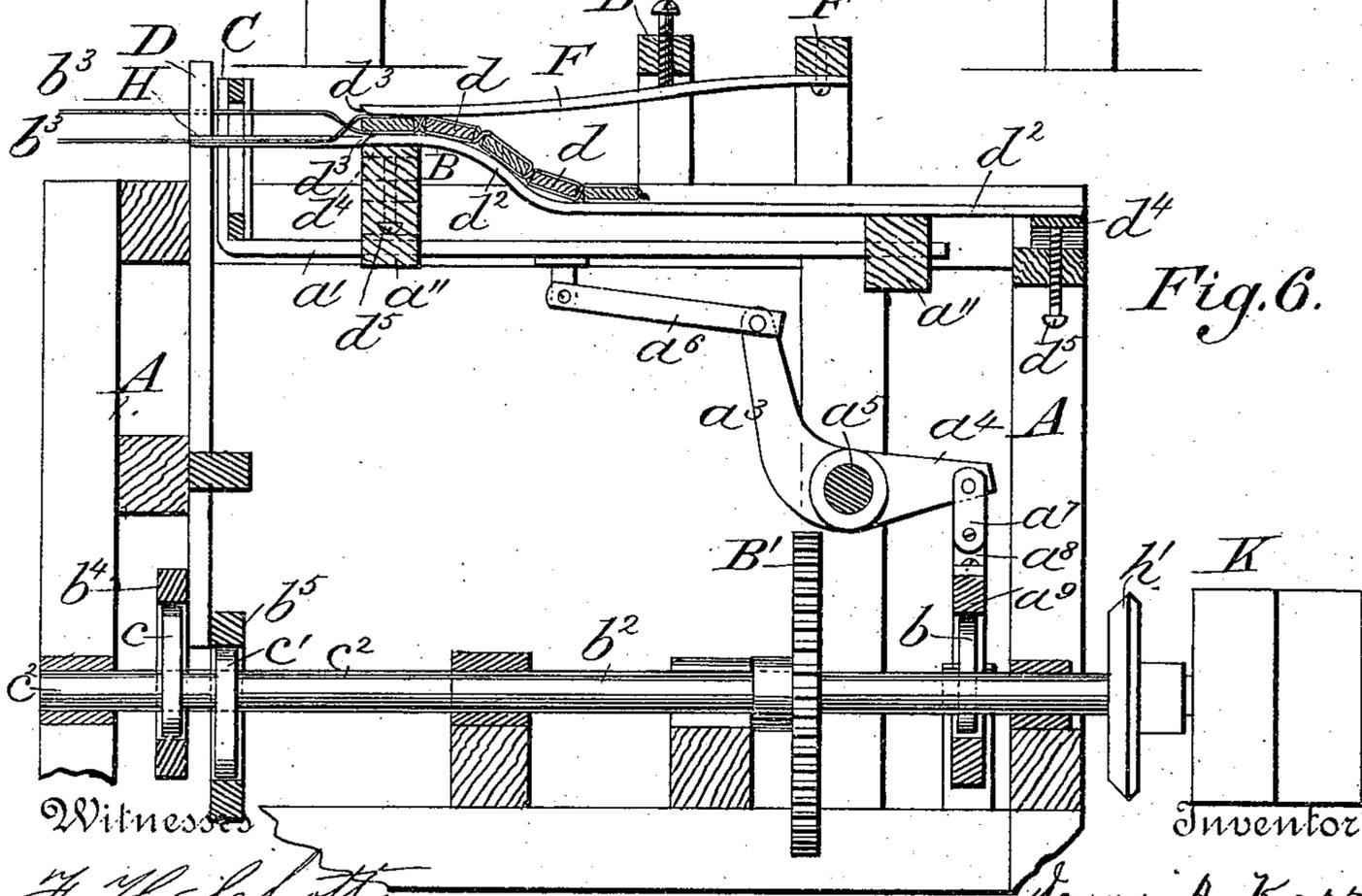


Fig. 6.



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(No Model.)

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Fig. 7.

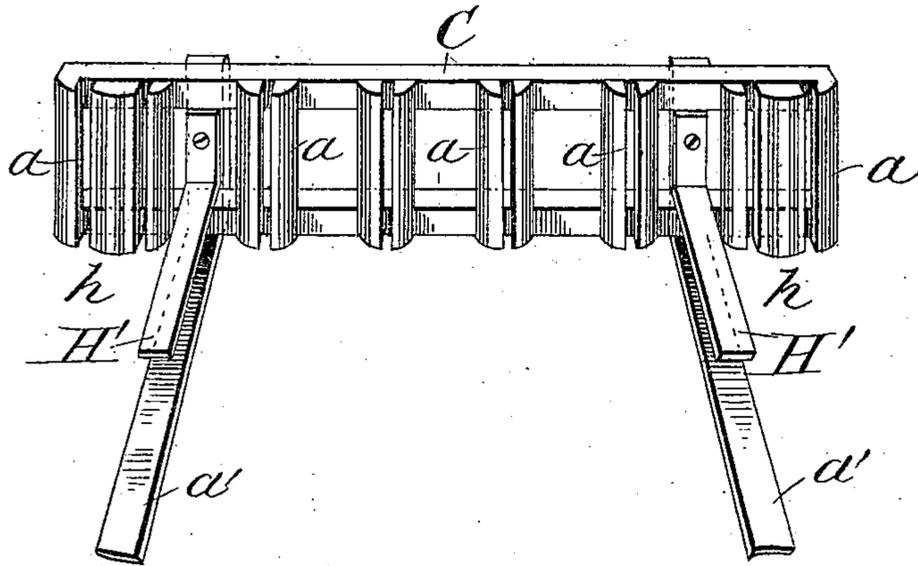
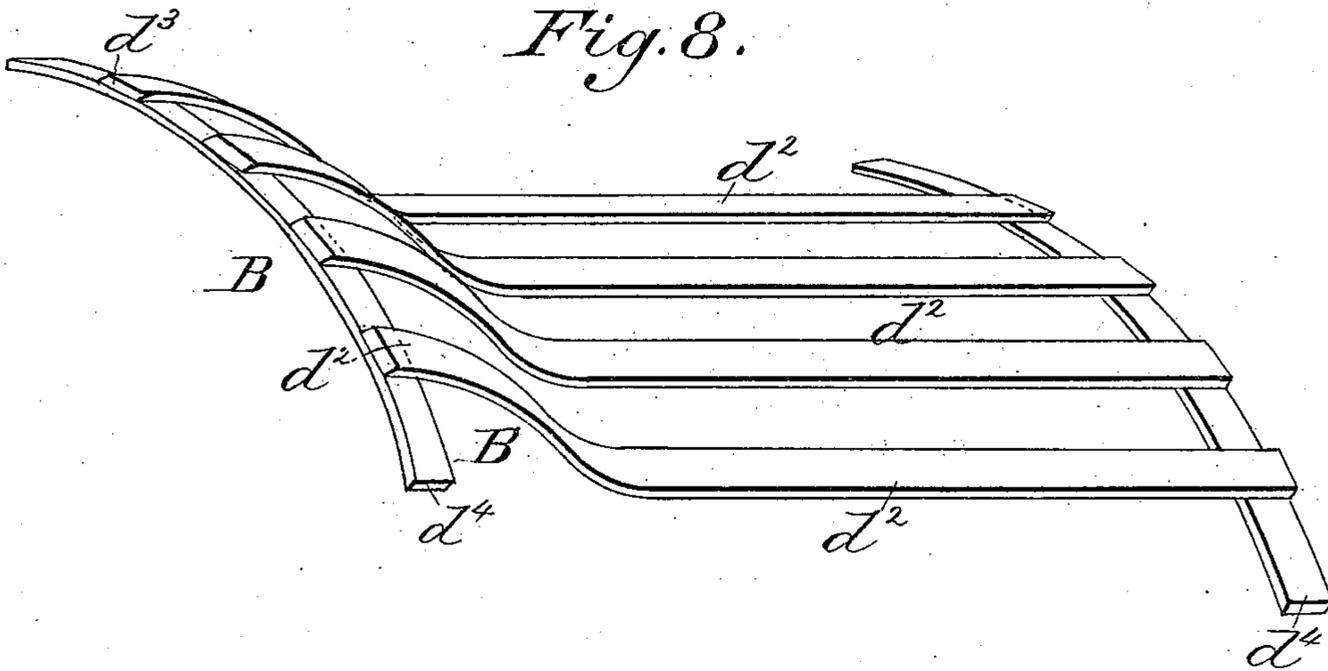


Fig. 8.



Witnesses

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G. B. Towles.

Isaac A. Kerr Inventor

By *his* Attorney *W. V. Purris*

UNITED STATES PATENT OFFICE.

ISAAC A. KERR, OF MUSCATINE, IOWA.

SLAT-WEAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,707, dated December 21, 1886.

Application filed September 20, 1886. Serial No. 214,066. (No model.)

To all whom it may concern:

Be it known that I, ISAAC A. KERR, a citizen of the United States of America, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Slat-Weaving Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved machine for weaving slats and wires into webs adapted especially to form the sides of barrels, kegs, hogsheads, crates, and other wooden vessels and receptacles; and the invention consists of the construction and combinations of the parts of the machine as hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a plan view. Fig. 3 is a cross-section on line 1 1 of Fig. 2. Fig. 4 is a front elevation. Fig. 5 is a back elevation. Fig. 6 is a vertical longitudinal section on line 2 2 of Fig. 5. Fig. 7 is a perspective of the lay, reeds, and connecting-bars detached from the machine. Fig. 8 is a perspective of the supporting-bars of the machine-bed detached from the machine.

A designates the machine-frame, constructed of bars of any suitable size and material, preferably of metal, jointed together in the usual manner.

The machine may be constructed with a curved bed, or with a plane flat bed, for different purposes, as hereinafter fully explained.

B designates a bed having its upper surface curved both longitudinally and transversely. This bed having the double-curved surface is designed for weaving slats and wires into webs adapted to form the sides of bulged barrels, &c., having between the slats ventilating-openings, enlarged from the ends to the middle of such barrels, as set forth in my application, Serial No. 213,550, filed September 15, 1886, for a patent for a ventilated barrel.

Machines designed to weave slats and wires into webs adapted to form the sides of straight barrels, and for flat work, are constructed with flat or plane beds.

C is the lay provided with the rounded reeds a . This lay is attached to bars a' , arranged to be reciprocated longitudinally in bearings and guides attached to or formed in the cross-bars

a^2 , which are attached to the frame. The lay is actuated by means of the arms $a^3 a^4$, mounted on the rock-shaft a^5 , having its bearings in upright bars of the frame. The upper ends of the arms a^3 are pivoted to the connecting-bars a^6 , which are pivoted to lugs attached to or formed on the lay-bars a' . The outer ends of the arms a^4 are pivoted to the upper ends of the connecting-bars a^7 , the lower ends of which bars are pivoted to lugs a^8 , attached to the cam-yoke a^9 . This yoke is reciprocated vertically in suitable guides by means of the cams $b b$ on the shafts b' , mounted in bearings attached to the machine-frame. These cams are rotated by means of a spur-wheel, B' , mounted upon the driving-shaft b^2 , placed in bearings attached to the machine-frame, which spur-wheel gears with the pinions B^2 , mounted on the cam-shafts b' .

D D' designate two sets of heddle-bars provided with eyes to receive the warp-wires b^3 , which are extended through the eyes in the bars. The lower ends of these bars are attached to horizontal bars of the cam-yokes $b^4 b^5$. These heddle-bars are reciprocated vertically in reverse directions by means of the cams $c c'$ placed within the yokes on the shafts $c^2 c^2$, journaled in bearings attached to the machine-frame. It will be observed that the cams $c c'$ are placed in reverse positions upon their shafts, so that the cams c in the yoke b^4 extend upward when the cams c' in the yoke b^5 extend downward, which arrangement of these cams is for the purpose of imparting the reverse movements to the heddle-bars, for decussating the warp-wires. These shafts and cams are driven by means of a central wheel, c^3 , mounted on the driving-shaft and gearing with the wheels c^4 , mounted on the cam-shafts c^2 .

F F' designate spring presser-bars, secured at their rear ends to the cross-bar F^2 , and are extended over the top of the bed in position to press upon and hold in place the wires b^3 and the slats d as they are being woven together. The pressure of these presser-bars may be regulated by any suitable tension devices. For the present I employ for this purpose tension-screws d' , placed in threaded bearings through a bar, B^3 , attached to the machine-frame. The lower ends of these tension-screws impinge upon the presser-bars.

The machine-bed is provided with supporting-bars d^2 , one of which is placed immediately under each run of the wires and under each presser-bar, as shown. It will be noticed
 5 that the presser-bars F' at each side of the machine-bed are double the width of the interior presser-bars. These wide bars are so made for extending over the double rows of wires, which in some cases may be woven near
 10 the ends of the slats. In this case the machine is provided with double sets of heddle-bars, and the lay is provided with double reeds opposite the wide presser-bars, as shown at h in Figs. 2 and 7. of the drawings.

15 The front end of each of the presser-bars and of the support-bars d^2 are beveled inwardly, as shown at d^3 in Fig. 6, to facilitate the feeding of the slats between the bars and to aid in shaping the loops of the wires around the
 20 slats.

This machine is adapted for weaving slats and wires into webs for any purpose for which such webs may be used. To completely prepare such webs, however, for particular purposes,
 25 the ends of the slats should not only be trimmed, but also otherwise prepared for that purpose. For example, in weaving webs to be used for window-shades, the slats should be trimmed to the required length, and the requisite grooves should be cut, near the ends
 30 of the slats, to receive the tapes or ribbons used for adjusting the shades; and in weaving webs for the construction of headed barrels, &c., the ends of the slats should be trimmed, chined, and crozed. This may be accomplished by suitable devices combined with trimmers, as shown at G in Figs. 1 and 2 of
 35 the drawings. Such devices may be driven by a band extended over a pulley on a shaft rotated by the gear-wheels h^1 h^2 , and over a pulley on the shaft carrying the trimming devices, as shown in Figs. 1 and 2 of the drawings.

40 H designates bars attached to the front portion of the machine-bed, and $H' H'$ are bars attached to and reciprocated with the lay. These bars form the rests for the slats as they are fed into the sheds of the wire-warp, in position to be pressed under the presser-bars.
 50 The bars H' aid in feeding the slats to the machine, and also serve as auxiliary guides to the lay.

The curved bed of the machine is constructed so as to be adjustable for varying its curvature,
 55 to increase or lessen the size of the ventilating-openings between the slats, it being evident that the greater the degree of curvature of the bed the wider will be the openings between the slats, and vice versa.

60 Any suitable devices may be employed for thus adjusting the bed. At present, for this purpose, I fasten the ends of the support-bars d^2 to thin curved bars d^4 , and I support these curved bars upon set-screws d^5 , having
 65 threaded bearings in cross-beams attached to the machine-frame. Recesses are formed in the frame, as shown by dotted lines at d^6 in

Fig. 5 of the drawings, to allow the free ends of the curved bars the play required in the adjustment of the curvature of the bed. 70

The operative devices of the machine are actuated by power applied by a belt running over the pulley K , which pulley is mounted on the driving-shaft.

In beginning the operation of weaving a
 75 web, the wires are extended through the eyes of the heddle-bars and through the reeds of the lay, and the ends of each set of wires are bent over a slat, so as to hold it in position on the support-bars $H H'$, to be pressed by the
 80 lay and its reeds between the presser and support bars. Then, the machine being put in operation, the two wires of each run are decussated by the reverse movement of the two sets of the heddle-bars, forming the sheds to
 85 receive the slats, which are inserted through the sheds, one at a time, by hand or by suitable machinery, and each slat thus inserted in place in the sheds is pressed by the lay under the ends of the presser-bars, and during the re-
 90 ciprocation of the lay the heddle-bars reverse their relative positions, decussating again the wires and forming new sheds for the insertion of another slat, and so on till the web is woven the required length. 95

The width of the spaces between the woven slats of the web is regulated by means of the tension-screws. The greater the tension upon the presser-bars, the closer the slats will be woven together, and vice versa. The tension
 100 may be such as to cause the slats to be woven with their edges joined closely together, which is desirable in weaving webs for nail-kegs and for some other purposes. In weaving the convex webbing for the construction of bulged
 105 barrels, &c., the tension on the presser-bars nearest the ends of the slats should be greater than the tension on the interior presser-bars, for the purpose of weaving the ends of the slats close together and allowing the middle portions of the slats to be spread apart to form between them openings of the required width. 110

It is evident that the double curved bed of the machine greatly facilitates, if, indeed, such a curved bed is not essential for, the weaving of
 115 such convex webs. The longitudinal curve allows the ends of the slats to be pressed and woven closely together, while the transverse curve of the bed bends and spreads apart the middle portions of the slats. 120

It will be seen that the spur-wheel B' is twice the size of the central wheel, c^3 , both of which wheels are mounted on the same shaft, and the pinions B^2 and c^4 , mounted on the cam-shafts and gearing with the spur-wheel and central
 125 wheel, being the same size, it is evident that the cams $b b$ will be rotated and will cause the yoke a^9 to be reciprocated twice while the cams $c c'$ rotate and the yokes $b^4 b^5$ reciprocate but once. This double reciprocation of the
 130 yoke a^9 produces, by means of the connecting devices, one complete reciprocation of the lay while each set of the heddle-bars moves in one direction only. These relative movements of

these devices are essential for the proper operation of my improved machine.

The ends of the woven slats being trimmed and properly prepared for the required uses while passing through the machine, as heretofore described, the webs are ready to be used with great facility in the construction of window-shades, barrels, kegs, and the other structures for which the webbing is designed and has been prepared.

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

1. The combination, with the bed, the heddle-bars, and the lay of a slat-weaving machine, of spring presser-bars, extended over the bed in position to compress separately each run of the warp and to hold in place the slats while they are being woven together, and means for regulating the tension of the bars upon the warp and slats, substantially as and for the purposes described.

2. A slat-weaving machine provided with a bed having its upper surface curved longitudinally and transversely, whereby the machine is adapted for weaving curved webbing, substantially as and for the purposes described.

3. In a slat-weaving machine, the combina-

tion, with the presser-bars $F F'$, the heddle-bars $D D'$, and the lay C , of the curved bed B and the means herein set forth for adjusting the bed, as and for the purposes described.

4. The combination, with the double sets of heddle-bars $D D'$, arranged to reciprocate vertically, the yokes $b^4 b^5$ and the cams $c c'$, mounted in reverse positions within the yokes upon revolving shafts, of the lay C , provided with the reeds a , and arranged to be reciprocated horizontally, the yoke a^9 , the cams b , and the connecting actuating devices, whereby the heddle-bars and the lay have imparted to them the relative movements substantially as and for the purposes described.

5. The combination, with the weaving devices of a slat-weaving machine, as herein set forth, of devices adapted to trim and prepare for the purposes designed, the ends of the slats, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC A. KERR.

Witnesses:

THOMAS P. SIMPSON,
FRANK M. GREEN.