H. M. LOFTON.

SHINGLE MACHINE.

APPLICATION FILED FEB. 24, 1908.

950,672.

Patented Mar. 1, 1910.

2 SHEETS—SHEET 1.

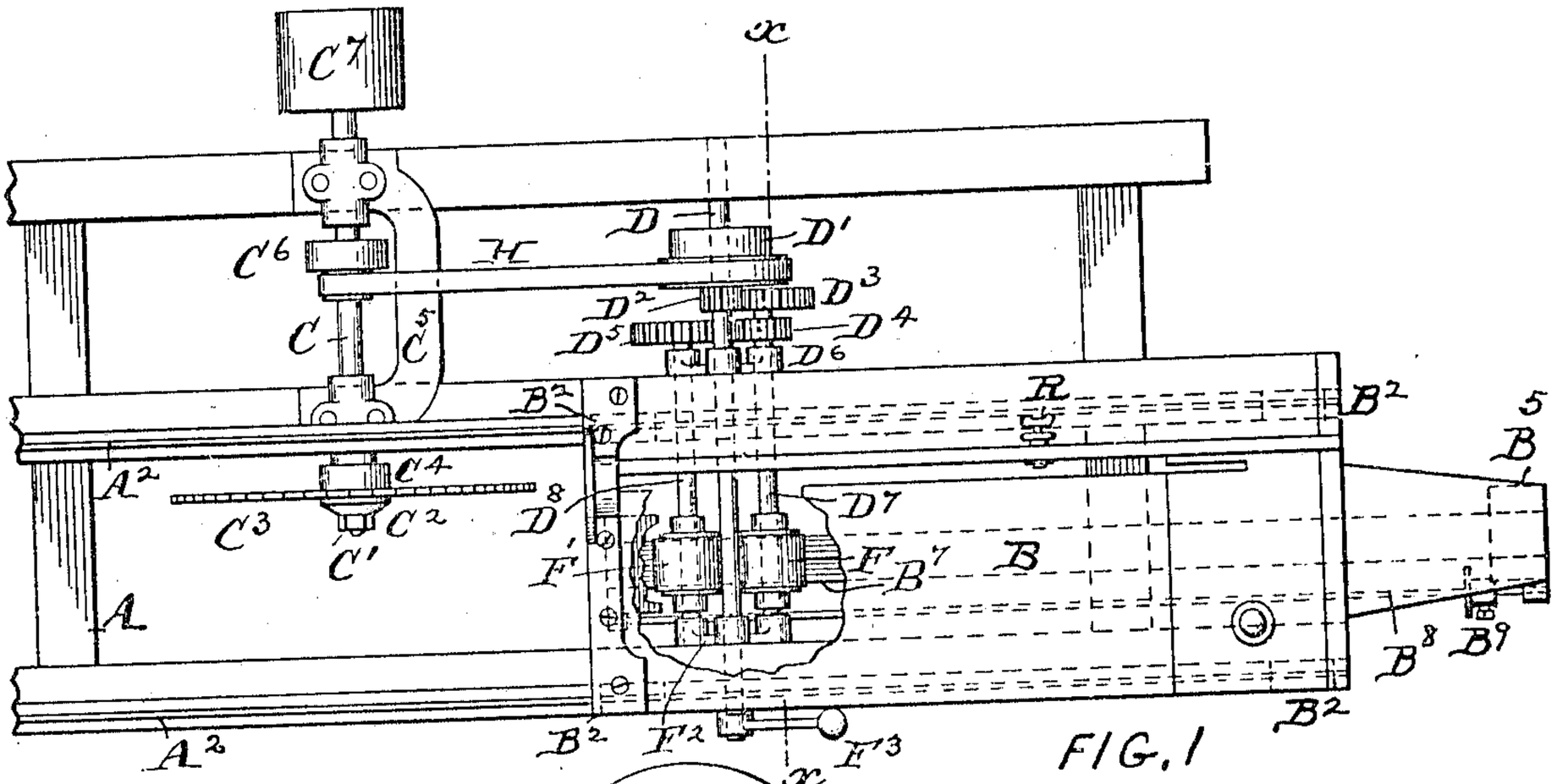

FIG. 1

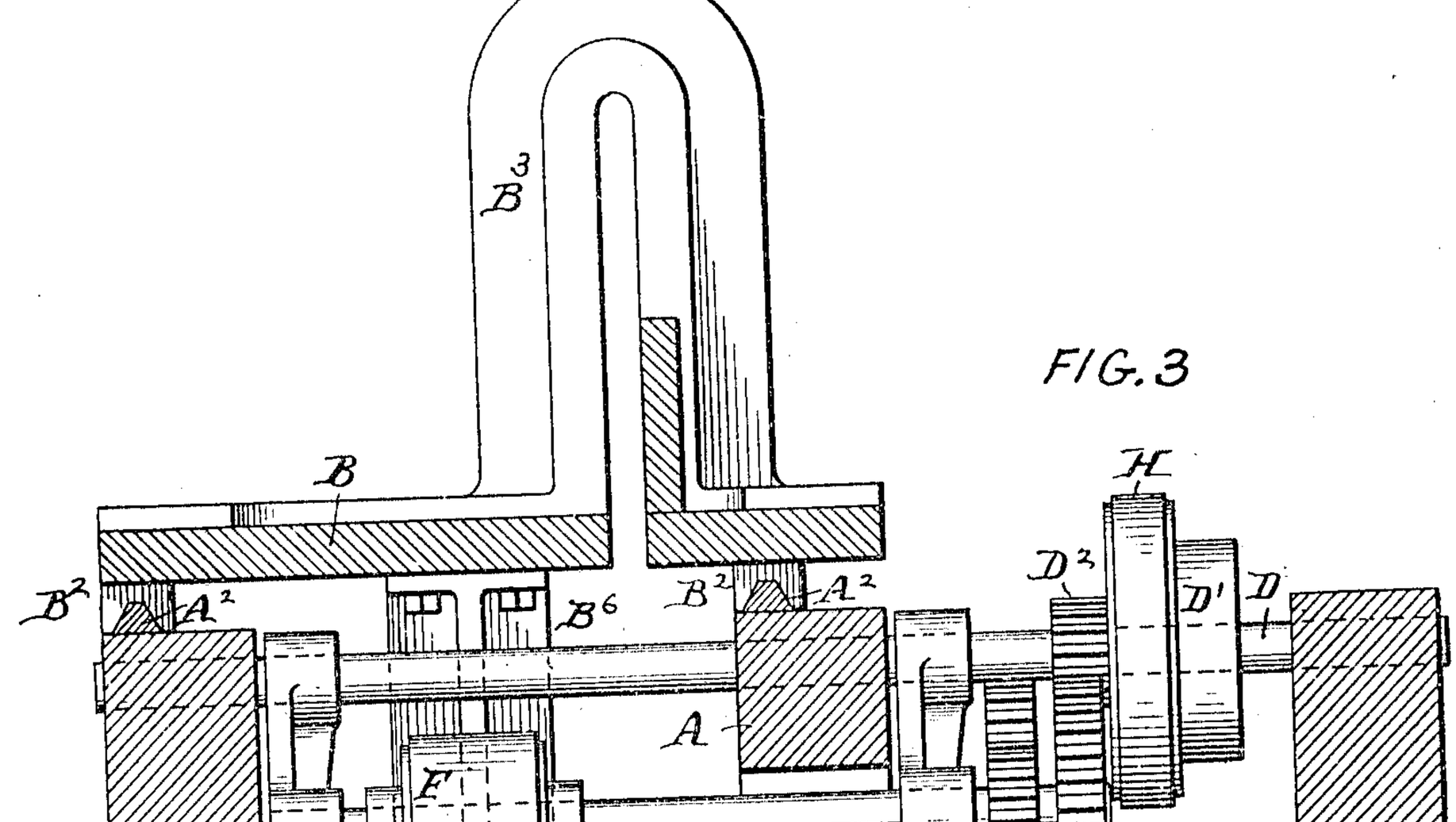

FIG. 3

Witnesses

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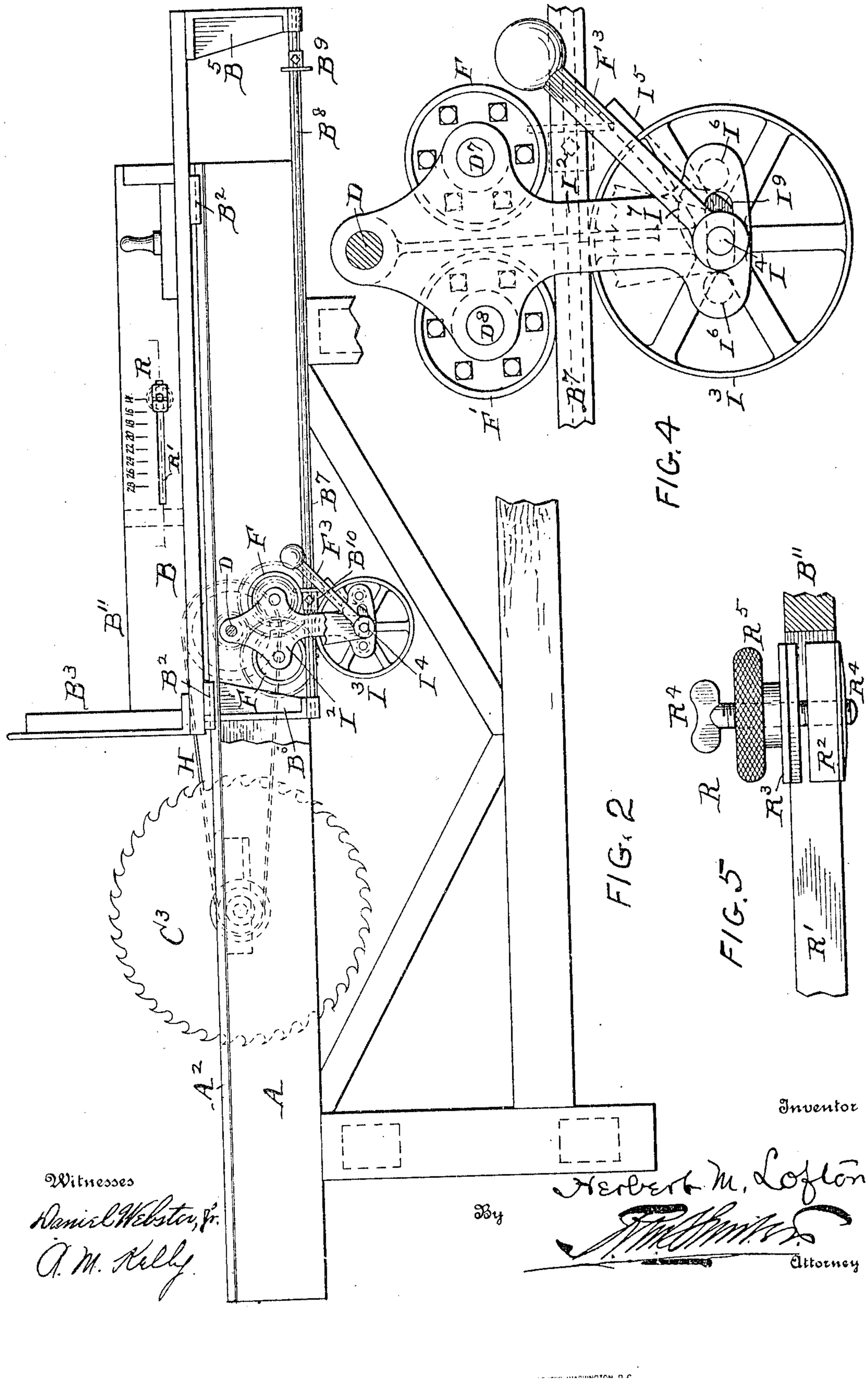

FIG. 2

FIG. 4

FIG. 5

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UNITED STATES PATENT OFFICE.

HERBERT M. LOFTON, OF ATLANTA, GEORGIA.

SHINGLE-MACHINE.

950,672. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed February 24, 1908. Serial No. 417,607.

To all whom it may concern:

Be it known that I, HERBERT M. LOFTON, a citizen of the United States, and a resident of the city of Atlanta, county of Fulton, and State of Georgia, have invented an Improvement in Shingle-Machines, of which the following is a specification.

My invention has reference to shingle machines, and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

Heretofore, there have been in use automatic shingle machines, but they have been of such complicated character and so costly to manufacture that they have been beyond the reach of many who desire a machine of moderate capacity. There have also been in use a number of semi-power shingle machines, but these while moderate in cost have required the reverse movement to be manipulated by either hand operated devices or foot pedals. Objection is found to this latter class of machines from the fact that the manually operated devices do not give satisfactory results in that they give the carriage a jerky motion which frequently causes breakage of the rack and pinion feed.

The object of my invention is to provide a construction of automatic power feed shingle machine of simple construction and medium capacity which will automatically reciprocate the table and will, at moderate cost, embody to a large degree the advantages of the more costly and complicated automatic power feed machines in use and avoid the objections of the more cheaply constructed manually controlled feed machines.

My invention consists of a reciprocating table provided with a friction board, combined with an idler pulley on one side of the board over which it freely travels, two friction wheels arranged upon the other side of the board and rotating in opposite directions, means for throwing either of the friction wheels into driving contact with the board at one time, and automatic devices controlled by the reciprocating table to control the means for throwing the friction wheels into driving contact with the board whereby the board and table are reciprocated backward and forward automatically and continuously.

My invention also comprehends details of construction which, together with the features above set forth, will be better understood by reference to the drawings, in which:—

Figure 1 is a plan view of an automatic power feed shingle machine embodying my invention; Fig. 2 is a side elevation of the same with part broken away; Fig. 3 is a cross section of the same on line *x*—*x* of Fig. 1; Fig. 4 is an enlarged view of a portion of Fig. 1 showing the friction feed mechanism; and Fig. 5 is a sectional plan view of the means for regulating the taper to be given to the shingle.

In this machine I have provided a friction board of suitable material attached to the moving table. This board has a smooth planed surface on both sides, and is hung just underneath the moving table and parallel with same, and on the underside of this board is an idler pulley, and on the upper side of this board, and just above the idler pulley are two friction wheels revolving in opposite directions and by means of automatic tappet collars first one of these friction wheels and then the other is made to engage the upper surface of the friction board, thus moving the table backward and forward automatically.

In the drawings, A is the main frame, and A^2 is the track upon which the sliding table B travels. This table has the vertical guide board B^{11}.

B^2 are bearing blocks which guide the table on the track rails A^2.

B^3 is a yoke for holding the two parts of the front end of the table together, it being understood that the table is slotted so that the saw C^3 can pass into this slot while sawing the shingles.

R is an adjustable knob, which can be moved along the slot R′ in the table back so that any length of shingle with desired taper may be sawed, from fourteen to twenty-eight inches, for example.

B^5 and B^6 are brackets respectively bolted to the ends of the table on the underside for supporting the tappet rod B^8.

B^7 is the friction board secured to the table and suspended underneath same by means of the brackets B^5 and B^6.

The tappet rod B^8 carries the tappet collars B^9 and B^{10}, which are adjustable longitudinally on the tappet rod, thus permitting any length of movement of the table desired up to the extreme limits.

C is the saw mandrel and carries the saw C^3, head C^4, cone pulley C^6 and main driving pulley C^7. The saw is clamped on the collar of the mandrel by a nut C′ and collar C^2.

D is a rocker shaft which is journaled in the main frame A. This shaft carries the cone pulley D′, the pinion D^2 which is made fast to cone pulley D′, and the two swinging brackets I^2. The brackets I^2 carry the shafts D^7 and D^8. Shaft D^7 carries and is secured to the friction wheel F, and is also provided with a pinion D^4 and a spur gear D^3. The shaft D^8 carries and is secured to the friction wheel F′ and is also provided with a spur gear D^5. The pinion D^2 drives the spur gear D^3 and shaft D^7 with its pinion D^4, and this latter drives the spur gear D^5 and its shaft D^8. By this means, the friction wheels F and F′ are driven in opposite directions. The front bracket I^2 extends downwardly, and at its lower end is provided with slot I^9 and studs I^6. The rear bracket I^2 may extend down and be slotted or may have no connection with the shaft I^4 as desired.

I^4 is a shaft suspended from the main frame A at either side by means of the brackets I. This shaft supports the idler friction wheel I^3 and carries at one end the weighted arm F^3, and just inside of the swinging brackets I^2, it is provided with the cam I^7, shown more plainly in Figs. 3 and 4. To this cam is secured the tappet arm I^5. The friction drive wheels F and F′ alternately coöperate wtih the idler wheel I^3 to grip the friction surface B^7 in moving the table. In this it will be observed that the oscillation of the frame I^2 will cause the axes D^7 and D^8 of the friction wheels F and F′ to move in substantially radial lines to and from the axis of the shaft I^4 carrying the large idler wheel I^3 and this will produce a gripping of the board B^7 with more or less of a spring action as the tendency will be to bend the board over the highest point of the idler wheel I^3. In this manner the cam which oscillates the frame I^2 may swing the frame positively to its extreme positions without danger of jamming the friction wheels and without placing excessive wear upon the friction surface B^7. By this construction, therefore, not only is the operation more smooth but the machine remains in operative condition for a longer period of time than if the friction surface were gripped between two wheels on the same line, because the wear on the board is materially less. Furthermore, the springing action of the board obviates the necessity of frequent adjustments since the board may wear very materially before the feeding devices will fail to perform their proper function. The weighted arm F^3 is intended to give the action of the cam I^7 a quick movement when being rocked by its arm I^5 but more particularly to hold the oscillating frame I^2 in position to apply pressure between the friction wheels F F′ and the board B^7 according to which of the friction wheels is in contact with the board. When the weighted arm F^3 is in the position shown in Fig. 4, the friction wheel F′ is pressed against the board by the weight action of this arm, and so, in connection with the other friction wheel F, when the weighted arm F^3 is thrown to the left.

In operation, the saw mandrel C is driven by suitable power through pulley C^7, and by means of the cone pulley C^6, belt H and the cone D′ transmits motion to the shaft D^7. The shaft D^7 by means of the pinion D^4 and the spur gear D^5 transmits motion to the shaft D^8, which being made fast to the friction wheel F causes same to revolve in the direction to propel the table to the right. By means of gears D^4 and D^5, shaft D^8 and its friction wheel F′ are rotated in a direction to propel the table to the left.

Assuming the parts are in the position shown in Fig. 2, it will be seen that the friction wheel F′ is in driving contact with the board B^7 and will act to propel the table to the left to cut a shingle. As soon as the tappet B^9 strikes the arm I^5 and shifts it beyond a vertical position, the weighted arm F^3 falls over, and the cam I^7 acting upon the stud I^6 to the left oscillates the brackets I^2 and with them the shafts D^7 and D^8. The result of this is to lift the friction wheel F′ from the board and throw the friction wheel F into driving connection with it. The table is now propelled backward until the tappet B^{10} comes into action to return the parts to their original position as shown in Fig. 2, and to once more cause the carriage to be propelled forward. The length of the reciprocations may be varied by adjusting either or both of the tappets B^9 and B^{10} on the tappet rod B^8. These tappets are provided with set screws for adjustably clamping them upon the rod.

Referring more particularly to the means for regulating the taper to be given to the shingle when being cut, the adjustable knob for this purpose is illustrated in Fig. 5.

R^2 is a sliding flanged plate fitting the slot R′. R^3 is a similar plate fitting the slot R′ from the near side of the board.

R^4 is a thumb screw which fits loosely through the plate R^3 and screws into and through the plate R^2 so as to project beyond the same to act as a rest for the shingle timber.

R^5 is a lock nut upon the screw R^4 and may clamp the device in position by forcing the plates R^2 and R^3 tightly upon the outer walls of the slots and by locking the screw R^4 in its plate R^2. In this manner, the projecting part of the screw R^4 may be made to protrude to any extent desired, and brought

to any position in the slot R′ required to suit the length of the shingle. In the operation of the machine, the wooden block near the forward end will rest against the end of the screw R^4 acting as an abutment, and the rear end of the block will be crowded back against the vertical guide board B^{11} of the table B, and this will cause the forward edge of the wooden block to have less wood beyond the plane of the saw than at its rear end, so that the action of the saw will cut shingles thinner at the forward end than at the rear end. The taper of the shingles may be varied by adjusting the screw R^4. For different length of shingles, the screw R^4 is adjusted along the slot R′ to the position required.

In this application I make no claim to those improvements relative to the sawing of shingles and more particularly to the adjustable gage therefor, as said matter is reserved for a divisional application.

I have shown my invention in the form which I have found most excellently adapted for the purpose intended, and while I prefer the constructions shown, I do not restrict myself to the details thereof as they may be modified in various ways without departing from the spirit of the invention.

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

1. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface, and devices operated by the table or a connecting part for operating said means at the completion of its travel in each direction.

2. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of an oscillating frame in which the wheels are journaled, and devices operated by the table or a connecting part for operating said means at the completion of its travel in each direction consisting of power devices for rocking the oscillating frame, and means moving with the table for moving the power devices.

3. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of an oscillating frame in which the wheels are journaled, and devices operated by the table or a connecting part for operating said means at the completion of its travel in each direction consisting of rotary cam devices for rocking the oscillating frame, and means moving with the table for automatically imparting a rotary motion to the cam devices first in one direction and then in the other.

4. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of movable supports for the wheels, and devices operated by the table or a connecting part for operating said means at the completion of its travel in each direction consisting of means to move the movable supports for the wheels, and adjustable tappets carried with the table to operate said means and adjustably secured to the table so as to produce wide variations in the travel of the table.

5. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of an oscillating frame in which the wheels are journaled, a pivoted cam to shift the oscillating frame having an arm, and tappets carried by the table to operate the arm and its cam at the end of each travel of the carriage.

6. In a shingle sawing machine, the com-

bination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of an oscillating frame in which the wheels are journaled, a pivoted cam to shift the oscillating frame having an arm, a weighted arm secured to the cam to cause it to move quickly in its action upon the oscillating frame, and tappets carried by the table to operate the arm and its cam at the end of each travel of the carriage.

7. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of an oscillating frame in which the wheels are journaled, a pivoted cam to shift the oscillating frame having an arm, a tappet rod carried by the table, and two adjustable tappets secured to the rod at widely separated positions to operate the arm and its cam at the end of each travel of the carriage.

8. In a sawmill, the combination of a reciprocating table, a friction board secured to the table, a single idler wheel below the board to support it, two friction wheels above the board and pulley and rotating in opposite directions, and each coöperating with the idler wheel, an oscillating frame in which the friction wheels are journaled, a cam to oscillate the frame to bring either friction wheel into driving contact with the board, and means under the control of the moving table to rock the cam at each full travel of the table.

9. In a sawmill, the combination of a reciprocating table, a friction board secured to the table, an idler wheel below the board to support it, two friction wheels above the board and pulley and rotating in opposite directions, an oscillating frame in which the friction wheels are journaled pivoted intermediate of the wheels and vertically above the axis of the idler wheel, a cam to oscillate the frame pivoted concentric to the axis of the idler wheel to bring either friction wheel into driving contact with the board, and means under the control of the moving table to rock the cam at each full travel of the table consisting of a weighted arm to give the cam a quick movement and apply pressure to the friction wheels upon the board, an arm secured to the cam, and widely separated tappets moved by the table to operate upon the cam arm to shift it and put the weighted arm into operative position.

10. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface, devices operated by the table or a connecting part for operating said means at the completion of its travel in each direction, power devices for operating the saw, separate shafts for operating the friction wheels, a driven shaft driven from the power devices for operating the saw, gearing connecting the driven shaft with the shafts whereby they are rotated continuously in opposite directions.

11. In a shingle sawing machine, the combination of a reciprocating table, a friction surface secured to and moving with the table, two friction wheels rotating in opposite directions, an idler friction wheel for supporting the friction surface when acted upon by each of the friction wheels located to one side of the place of contact thereof, means to alternately bring the friction wheels into driving coöperation with the idler friction wheel and into frictional connection with the friction surface consisting of adjustable bearings for the friction wheels, cam devices journaled on the axis of the idler roller for shifting the bearings, means connected with the table to rock the cam at the termination of each movement of the table, and a weighted arm secured to the cam to maintain the friction between the friction surface and the friction wheel in operative contact with it.

In testimony of which invention, I have hereunto set my hand.

HERBERT M. LOFTON.

Witnesses:
T. T. Smith, Jr.,
Minnie Moore.