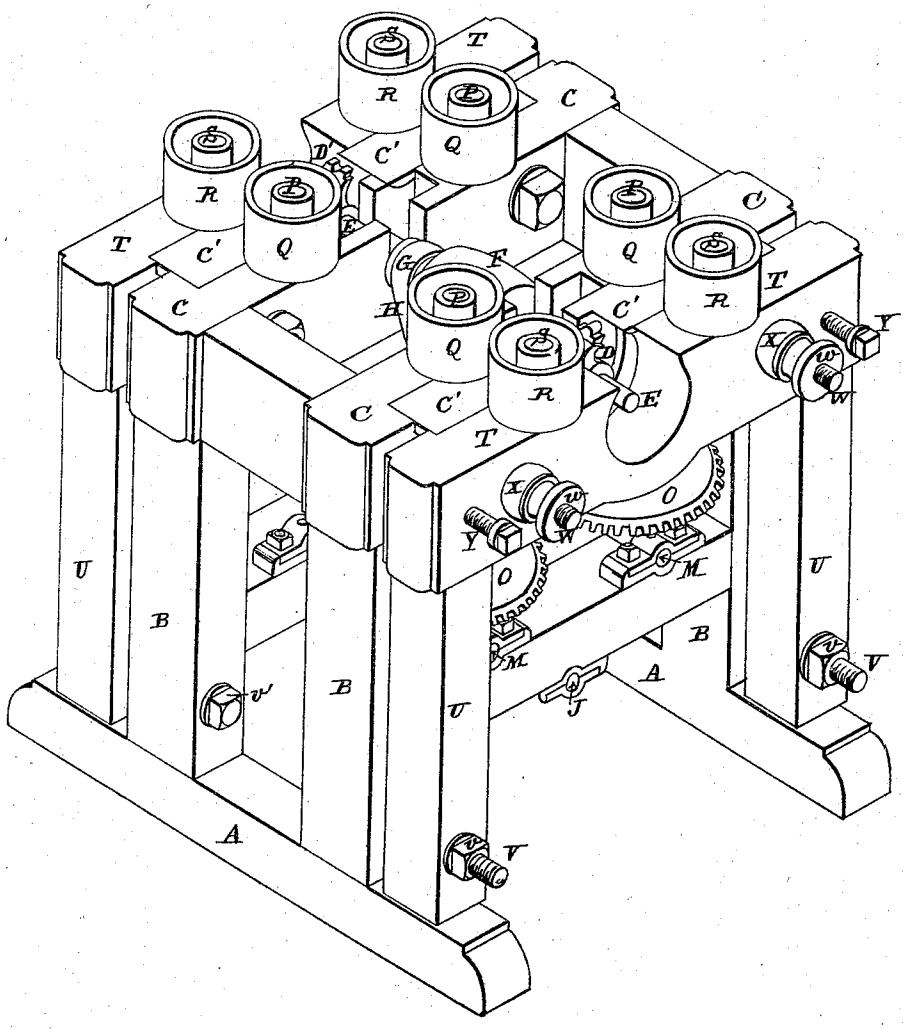
2 Sheets—Sheet 1.

G. T. RIDDLE.

MATCHING-MACHINE FOR BOX-STUFF.

No. 170,114. Patented Nov. 16, 1875.

FIG. 1.



ATTEST:

Robt Burns.
Henry Tanner.

INVENTOR:

George T. Riddle
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2 Sheets—Sheet 2.

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FIG. 2.

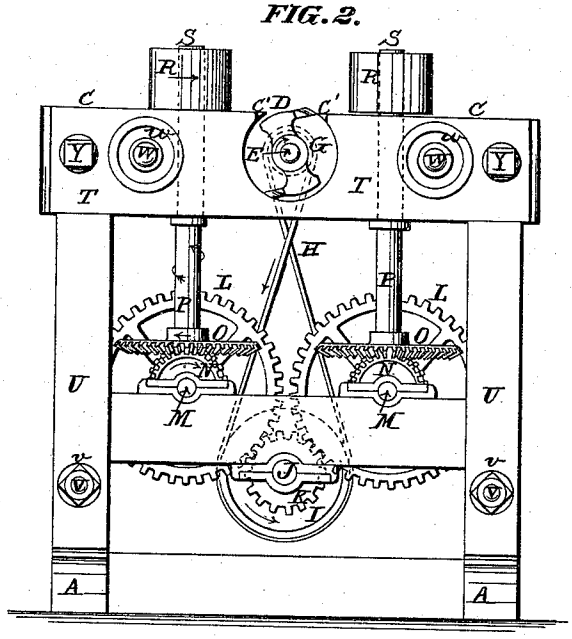
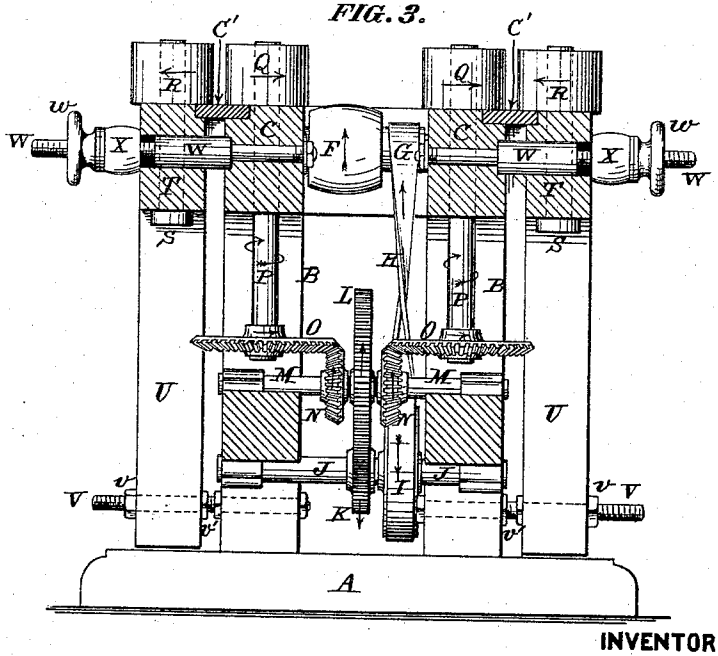


FIG. 3.



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UNITED STATES PATENT OFFICE.

GEORGE T. RIDDLE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN MATCHING-MACHINES FOR BOX-STUFF.

Specification forming part of Letters Patent No. **170,114**, dated November 16, 1875; application filed April 6, 1875.

To all whom it may concern:

Be it known that I, GEORGE T. RIDDLE, of St. Louis, St. Louis county, State of Missouri, have invented a certain new and useful Improvement in Matching-Machines for Box-Stuff, of which the following is a specification:

My improvement relates to a machine having feed-rollers and cutters arranged for matching (or tonguing and grooving) short stuff or boards for boxes. The outer feed-rollers, upon each side, are journaled in frames, which are supported on bolts in such a manner as to admit of outward and inward adjustment, and for the upper part of the frame to admit of outward and inward motion, according to the thickness of the stuff. The upper parts of these frames are thrust inward by rubber or spiral springs, so as to press the rollers against the stuff or board, and the force of the springs is regulated by temper-nuts. The minimum distance of the outer rollers from the driving feed-rolls is regulated by screws which screw in the moving frame, and bear against the main frame. These side frames are made removable to give easy access to the cutter-heads. The top of the table or bed, upon which the lower edge of the stuff slides, is inclined from the horizontal, (the rear side, as the stuff moves,) being somewhat the higher, in addition to the last part of the bed being in a higher plane, to suit it to the dressed edge of the stuff; for, in addition to tonguing or grooving the edge, as the case may be, the edge is dressed off by the cutter. This inclination is to insure the constant contact of the lower edge of the stuff with the table or bed, as the rolls tend to feed it in a horizontal direction, and when the bed is inclined in this manner the edge is pressed against the table or bed against the action of the cutter to throw it upward.

In the drawings, Figure 1 is a perspective view of my machine. Fig. 2 is a side elevation. Fig. 3 is a vertical section on a plane parallel with the cutter-shaft.

A A are the sills; B B, the posts, and C C the bars or table or bed-frame. D D′ are the cutter-heads, in which the tools or cutters are of different form, so as to cut the opposite edges of the stuff to match by a tongue-and-groove joint. Thus the cutter D forms the groove, and the cutter D′ the tongue. The tables C′, upon which the lower edge of the stuff slides, are slightly inclined upward from the side of the machine on which the stuffs enters toward the side from which it leaves the machine, so that as the stuff is fed forward by the rolls it will be in close contact with the table or bed.

It will be observed that the feed-rolls, being on vertical shafts, will tend to carry forward the stuff in a horizontal direction, and that the weight of the stuff will tend to keep it in contact with the table C′; but, in opposition to these tendencies, the action of the cutter tends to throw up the stuff, and it is liable to be raised from contact with the table. The inclination of the bed obviates this difficulty by its conjoint action with the rolls, inclined in relation to it. The cutter-heads D D′ are upon a single shaft, E, which carries the driving-pulley F of the machine. Upon the shaft E is a pulley, G, on which is a belt, H, extending around a pulley, I, on a shaft, J, which carries a spur-pinion, K, engaging spur-wheels L on shafts M. The shafts M each carry two bevel-wheels, N, engaging with the wheels O on the feed-roll shaft P. Q are the positive feed-rolls on the upper ends of the shafts P. R are the outer feed-rolls, which are turned by the friction of the stuff against them, and whose sole office is to press the stuff against the rolls Q without materially checking its feed-motion across the top of the machine. The shafts S of the rolls R are journaled in the bar T, forming the top bar of the side frame upon each side, of which U U form the uprights. The side frames T U are connected to the main frame by bolts V V and W W, supplied with nuts *v* and *w*, respectively. Between the nuts *w* and the bar T are annular rubber or spiral metal springs X, thrusting the tops of the side frames T U toward the main frame, so as to cause the rolls R to press upon the outer side of the stuff and hold it against the rolls Q. The tension of these springs is regulated by the temper-nuts *w* and the distance-screws Y, which latter screw in the bars T, and have bearing against the bars C of the main frame, to regulate the minimum distance of the rolls R from those Q. Upon the bolts V, at the inner side of the up-

rights U, are set-nuts v', and by means of these nuts and those v the lower ends of the side frames T U are adjusted as to distance from the main frame.

In adjusting the position of the frames T U, said frames are arranged so as to be about vertical when the stuff is passing through, so that the whole height of the rolls shall come in contact with the stuff, and the minimum distance of the rolls R from those Q is made a little less than the thickness of the thinnest boards. The required tension to make the feed effective is then put upon the springs X by the temper-nuts w. Where the minimum distance of the rolls R from those Q is much less than the thickness of the stuff the rolls fail to grasp the stuff when presented to them, and its entrance between them is checked. The purpose of the distance-screws Y is to keep the rolls from coming too close together in the absence of the stuff.

I claim—

1. The combination, with the rolls Q and R, main frame A B C, and side frame T U, of the set-nuts v v', temper-nuts and springs w X, and distance-screws Y, all substantially as set forth.

2. The combination of cutter-heads D D′, rolls Q and R, springs X, temper-nuts w, set-nuts w v', and frames T U, all substantially as set forth.

3. The combination of the cutter-heads D or D′, vertical feed-rolls Q and R, and inclined bed or table C′, substantially as and for the purpose set forth.

GEORGE T. RIDDLE.

Witnesses:
SAML. KNIGHT,
ROBERT BURNS.