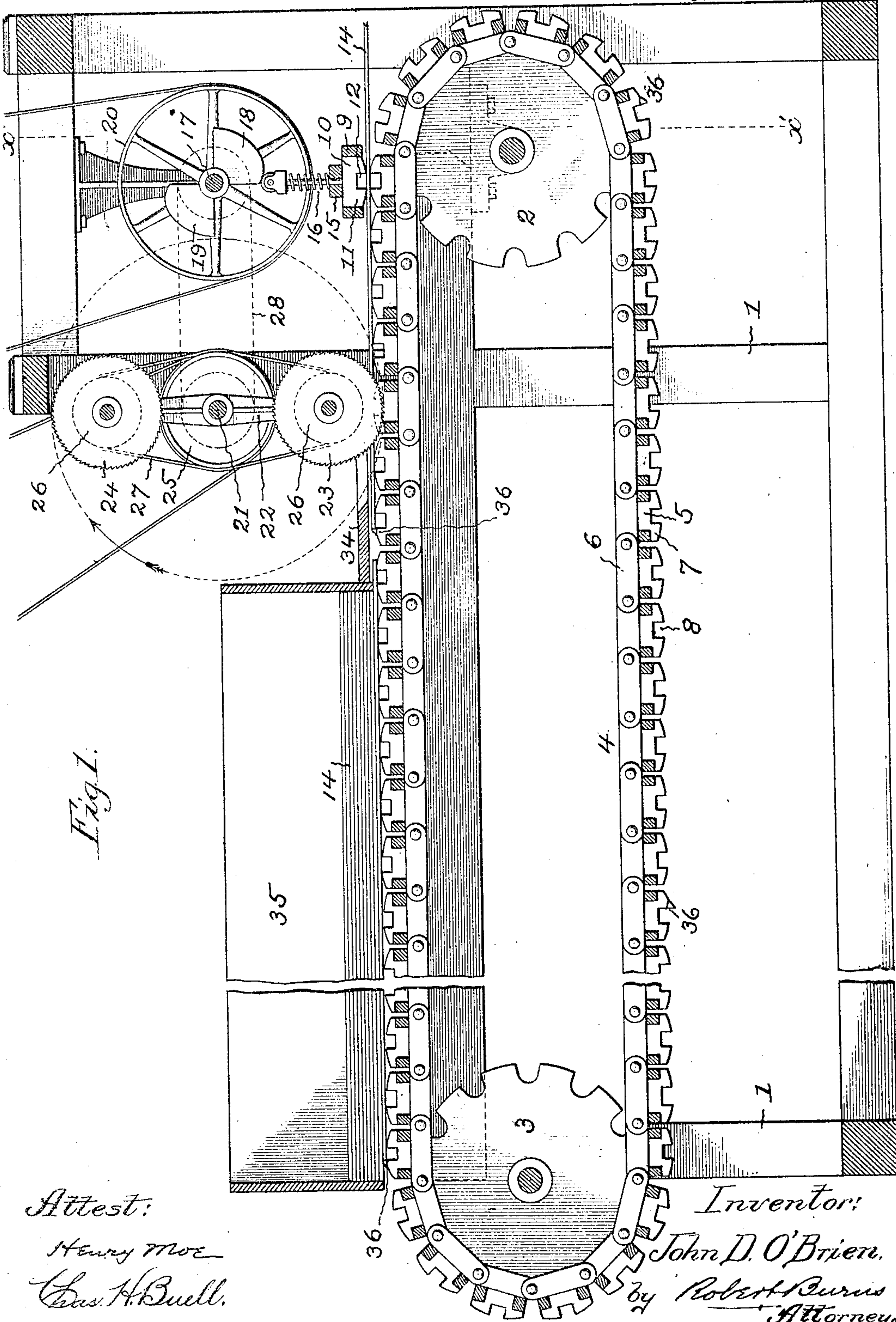


No. 849,422.

PATENTED APR. 9, 1907.

J. D. O'BRIEN.
SHEET LATHING MACHINE.
APPLICATION FILED JUNE 26, 1906.

3 SHEETS—SHEET 1.



Attest:
Henry Moore
Chas. H. Buell.

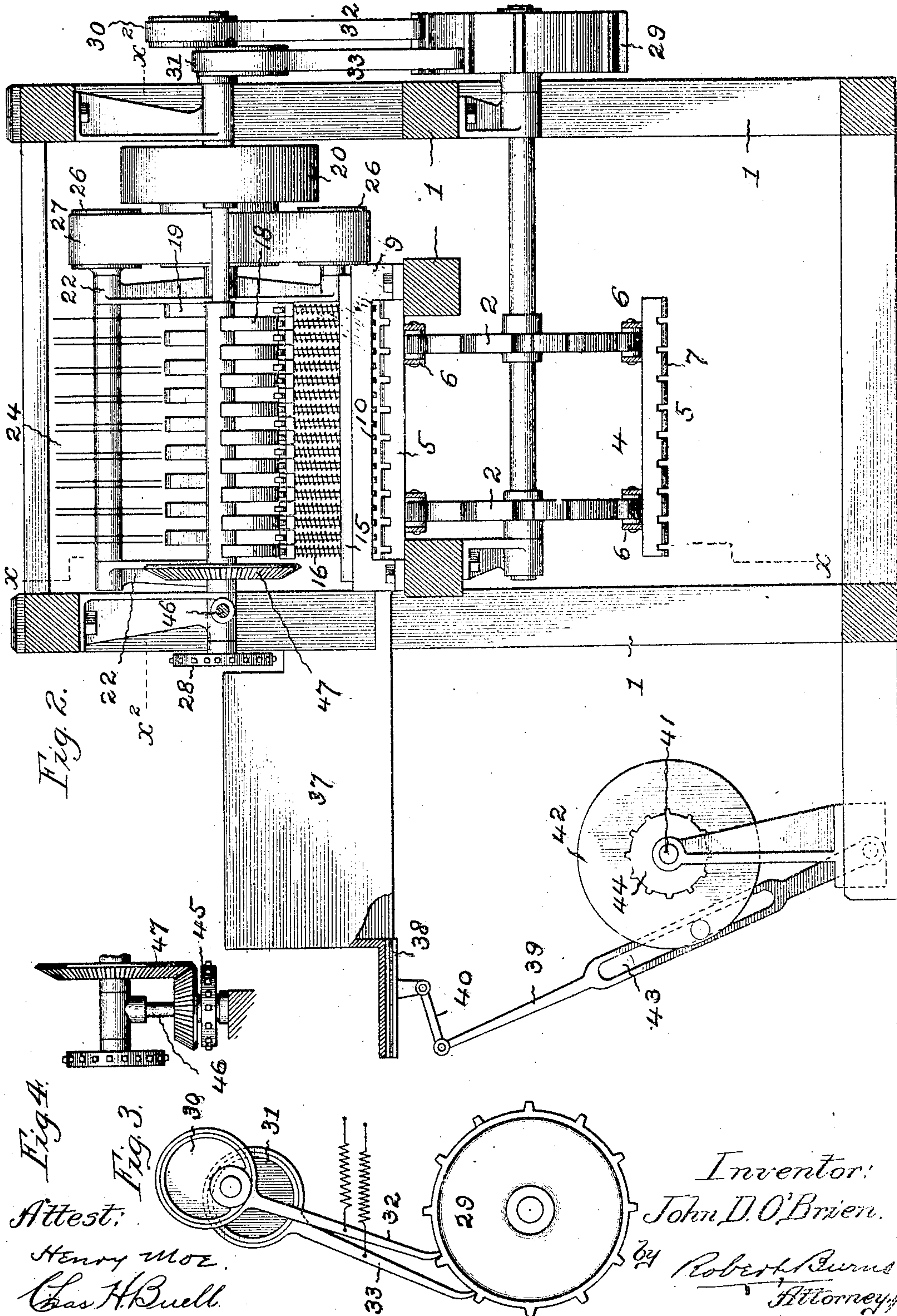
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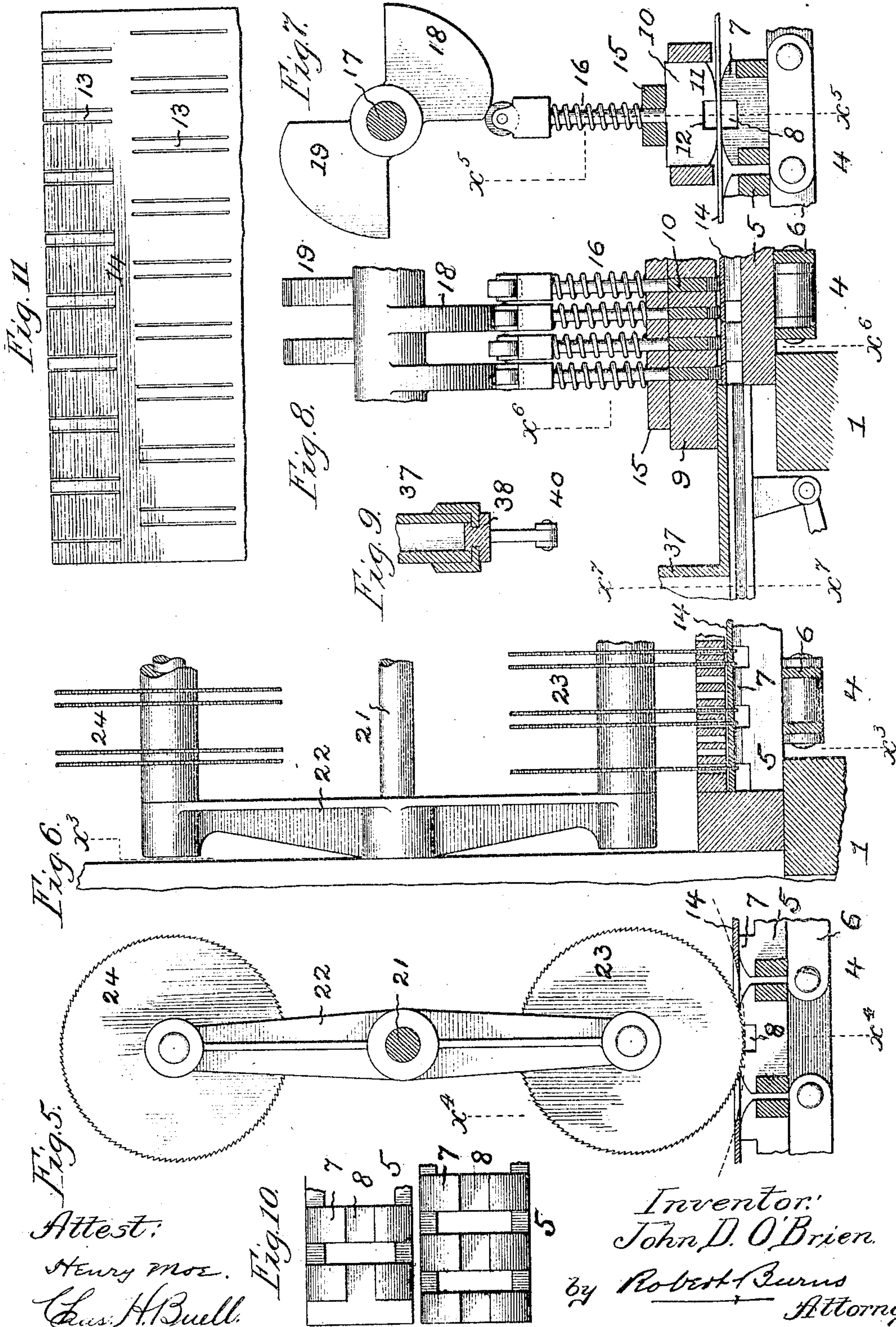
Inventor:
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3 SHEETS—SHEET 3.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN D. O'BRIEN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF FIFTY-ONE ONE-HUNDREDTHS TO FRANK B. McKENNA, OF ST. LOUIS, MISSOURI.

SHEET-LATHING MACHINE.

No. 849,422.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed June 26, 1906. Serial No. 323,465.

To all whom it may concern:

Be it known that I, JOHN D. O'BRIEN, a citizen of the United States of America, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Sheet-Lathing Machines, of which the following is a specification.

This invention relates to mechanisms for weaving sheet-lathing for buildings, and more especially the type of such lathing which forms the subject-matter of a companion application for Letters Patent, Serial No. 323,464; and the present improvement has for its object to provide a simple and durable construction and combination of parts whereby longitudinal slits are formed in a sheet of wood veneer to provide a series of longitudinal and integral strips, which are in turn deflected laterally to form sheds, into which the transverse separator-bars are in turn introduced, the various operations being effected in a successive and automatic manner, all as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a longitudinal section on line $x x$, Fig. 2, of the machine in its preferred form. Fig. 2 is a transverse elevation with parts in section on line $x' x'$, Fig. 1. Fig. 3 is a detail side elevation of the operating mechanism of the carrier-apron of the machine. Fig. 4 is a detail horizontal section on line $x^2 x^2$, Fig. 2. Fig. 5 is an enlarged detail longitudinal section on line $x^3 x^3$, Fig. 6, of the slit-forming saw mechanism of the machine. Fig. 6 is an enlarged detail transverse section of the same on line $x^4 x^4$, Fig. 5. Fig. 7 is an enlarged detail longitudinal section on line $x^6 x^6$, Fig. 8, of the shed-forming mechanism. Fig. 8 is an enlarged detail transverse section of the same on line $x^5 x^5$, Fig. 7. Fig. 9 is a detail section on line $x^7 x^7$, Fig. 8, of the hopper and feeding-plunger for the separator or weft bars contained in said hopper. Fig. 10 is an enlarged detail plan of end portions of two adjacent slats of the carrier-apron. Fig. 11 is a detail plan view of a portion of the lathing-sheet, illustrating the arrangement of the slits in the same.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the main frame of the machine of any usual and suitable construction and upon which the

various mechanisms of the machine are supported or journaled, as hereinafter set forth.

2 and 3 are sprocket-carrying drums or wheels journaled to the frame 1 in separated relation and forming a support for the longitudinally-extending and endless carrier or apron hereinafter described.

4 is the endless carrier above referred to, comprising a series of transversely-arranged slats 5, attached to endless chains 6, which in turn have operative engagement with the sprocket-drums 2 and 3, as shown. In the present improvement the slats 5 are provided with a plurality of shed-forming projections 7 upon their upper faces, which projections are separated by intervening recesses adapted to receive and permit the free downward movement of the shed-forming plungers, as well as the series of slitting-saws hereinafter described. The projections of one slat has an alternated or interspaced relation to the rows of such projections of the next adjacent slats, as illustrated more particularly in Fig. 10.

8 are central recesses formed in the projections 7 aforesaid to provide passage-ways for the weft-bars of the sheet-lathing, as hereinafter more fully set forth.

9 is a transverse guide-frame secured at its ends to the main frame 1, as shown more particularly in Figs. 2, 7, and 8.

10 are the transverse plurality of shed-forming plungers heretofore referred to and which have vertical movement in the guide-frame 9. Such plungers are formed at their lower ends with shed-forming projections 11 and central recesses 12, corresponding to the like parts of the slats 5 above described and adapted in conjunction therewith to constitute the shed-forming means of the present machine, and said projections will preferably have the convex form shown, with a view to effecting sheds in the lathing-sheets without danger of fracture of the parts of said sheets.

The plurality of plungers 10 above described are equal in number to the combined number of the intervening recesses of two adjacent slats 5 aforesaid, and each plunger is individual to an individual intervening recess of one or the other of said slats. Such plungers are adapted to be alternately operated by means hereinafter described in two alternating series and with each alternating series individual to the intervening recesses

and shed-forming projections of one of the described pair of slats 5. The arrangement is such that with a particular slat 5 in vertical alinement with the plungers and with a descent of the particular series of plungers the particular row of strips 13 of the lathing-sheet 14 will be depressed into the intervening recesses aforesaid to form a transverse depending series of sheds adapted for the passage and reception of the weft bars or strips of the sheet-lathing and while weft-bars or strips are automatically introduced into place by mechanism hereinafter described.

15 15 is a secondary guide-frame for the carrying-stems of the plungers 10 aforesaid.

16 are springs tending to force the plungers 10 upward into a dormant or inactive position.

20 17 is a cam-shaft journaled in the main frame and carrying two series of cams 18 and 19 in alternated relation, as shown more particularly in Figs. 1, 2, 7, and 8, and individual to the alternated series of plungers 10, before described.

20 is a driving-pulley carried by the shaft 17.

21 is a shaft journaled in the main frame and carrying a frame or spider 22, in the outer ends of which are journaled two transverse banks of circular saws 23 and 24 in alternated relation to each other, as shown more particularly in Fig. 6. With such arrangement the saws receive rotary motion on the axis of their carrying-shafts and an orbital motion around the axis of the shaft 21 and so that in their orbital travel each bank of saws will cut a transverse series of longitudinal slits in the lathing-sheet and form therein the rows of strips 13, before referred to.

25 25 is an idler-pulley mounted on the shaft 21 and adapted to receive rotation by belt connection from the power source and transmit said motion to the pulleys 36 on the saw-carrying shafts by belt connection 27, as shown in Fig. 1.

28 is a belt-and-pulley connection between the cam-shaft 17 and the shaft 21 for imposing movement in unison upon said shafts.

29 is a ratchet-wheel secured to the shaft of the forward sprocket drum or wheel 2 of the endless carrier 4 aforesaid and provided with ratchet-teeth equal in number to the sprockets of said drum or wheel 2 and so that at each intermittent actuation of said ratchet-wheel the endless carrier 4 will be advanced a distance equal to the distance between the centers of the slats 5 of the said carrier.

30 and 31 are a pair of eccentrics set in opposed relation on the shaft 17 and provided with pawl-yokes 32 and 33, adapted to engage the ratchet-wheel 29 in common to impart two intermittent impulses to the same in one revolution of said cam-shaft 17.

34 is a transverse comb-bar arranged be-

neath the saws and above the endless carrier aforesaid and adapted to hold down the lathing-sheet during the slit-sawing operations before described.

35 is an open-bottom stationary hopper arranged in the rear of the saw mechanism aforesaid and directly above the endless carrier or apron 4, which forms a bottom for said hopper. Such hopper is intended to contain a pile of the wood sheets from which the lathing-sheets are to be formed.

36 are projecting teeth or dogs arranged at proper longitudinal intervals upon the series of transverse slats 5 and adapted to engage behind a lathing-sheet, as shown in Fig. 1, to positively carry the same forward through the sawing and shed-forming mechanisms aforesaid and discharge the finished article at the forward end of the machine.

37 is an open-bottom stationary hopper arranged transversely at one side of the machine, with its bottom in line with the passage-way formed by central recesses 8 of the slats 5 and immediately beneath the shed-forming plungers 10. Said hopper holds a pile of weft bars or strips for the lathing-sheet in course of manufacture.

38 is a reciprocating slide moving in the bottom of the hopper 37, with its forward end adapted to engage behind the lowermost weft-bar in said hopper and in a forward movement of said slide push said weft-bar into place in the transverse series of sheds formed by the shed-forming mechanism before described.

39 is an operating arm pivoted at one end to the main frame 1 and connected at its other end to the slide 38 by a connecting-link 40, as shown.

41 is a counter-shaft journaled on the main frame and carrying a crank-disk 42, the crank-pin of which has operative engagement in an elongated slot 43 in the arm 39 aforesaid to impart the proper vibratory movement to said arm and the weft-bar feeding-slide of the machine.

44 is a chain-wheel carried by the shaft 41 and having chain connection with a similar wheel 45 on another counter-shaft 46, which in turn has bevel-gear connection 47 with the cam-shaft 17 of the machine.

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

1. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces shed-forming devices.

2. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier.

3. A sheet-lathing machine provided with

an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier and presenting guideways transversely of the machine for the passage of the weft-strips.

4. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier, and means for imparting an intermittent travel to said carrier and a reciprocation to said plungers.

5. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other, and means for feeding the weft-bars between the shed-forming devices.

6. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier, and means for forming a series of longitudinal slits in the sheet of material operated upon.

7. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier and presenting guideways transversely of the machine for the passage of the weft-strips, and means for forming a series of longitudinal slits in the sheet of material operated upon.

8. A sheet-lathing machine provided with an endless carrier and cooperating plungers having on their opposed faces coacting rows of shed-forming devices, said rows being staggered with relation to each other on the endless carrier, means for forming a series of longitudinal slits in the sheet of material operated upon, and means for feeding the weft-bars between the shed-forming devices.

9. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

10. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being ar-

ranged in rows and each row comprising a number of separated projections, each formed with a central recess, the projections of each row having a staggered relation to the like projections of the next adjacent rows, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

11. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

12. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections, each formed with a central recess, the projections of each row having a staggered relation to the like projections of the next adjacent rows, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier, and reciprocation to the plungers.

13. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for forming a series of longitudinal slits in the sheet of material operated on, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

14. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections on the next adjacent rows, means for forming a series of longitudinal slits in the sheet of material operated on, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

15. A sheet-lathing machine, comprising two series of alternating plungers, a moving

carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in a staggered relation to the like projections on the next adjacent rows, both in a parallel and transverse direction, and means for imparting intermittent travel to the carrier and reciprocatation to the plungers.

16. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections, each formed with a central recess, the projections of each row having a staggered relation to the like projections of the next adjacent rows, both in a parallel and transverse direction, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

17. A sheet-lathing machine, comprising
two series of alternating plungers, a moving
carrier, coacting shed-forming projections on
the adjacent faces of the plungers and carrier,
the projections on the carrier being arranged
in rows and each row comprising a number of
separated projections arranged in staggered
relation to the like projections of the next ad-
jacent rows, both in a parallel and transverse
direction, means for feeding a series of weft-
bars between the shed-forming projections,
and means for imparting intermittent travel
to the carrier and reciprocation to the plun-
gers.

18. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections, each formed with a central recess the projections of each row having a staggered relation to the like projections of the next adjacent rows in both a parallel and transverse direction, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

19. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows in both parallel and transverse direction, means for forming a series of longitudinal slits in the sheet of material operated on, and means for imparting intermittent

travel to the carrier and reciprocation to the 65
plungers.

20. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coating shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows in both a parallel and transverse direction, means for forming a series of longitudinal slits in the sheet of material operated on, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

21. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections on the next adjacent rows, means for feeding a sheet of material to the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

22. A sheet-lathing machine, comprising 95
two series of alternating plungers, a moving
carrier, coacting shed-forming projections on
the adjacent faces of the plungers and car-
rier, the projections on the carrier being ar-
ranged in rows and each row comprising a 100
number of separated projections, each formed
with a central recess, the projections of each
row having a staggered relation to the like
projections of the next adjacent rows, means
for feeding a sheet of material to the shed- 105
forming projections, and means for impart-
ing intermittent travel to the carrier and re-
ciprocation to the plungers.

23. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for feeding a sheet of material to the shed-forming projections, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

24. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carriers, the projections on the carrier being arranged in rows and each row comprising a

ing projections, the same comprising a series of dogs on the carrier, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

29. A sheet-lathing machine, comprising 70
two series of alternating plungers, a moving
carrier, coating shed-forming projections on
the adjacent faces of the plungers and car-
rier, the projections on the carrier being ar-
ranged in rows and each row comprising a 75
number of separated projections arranged in
staggered relation to the like projections of
the next adjacent rows, means for feeding a
sheet of material to the shed-forming pro- 80
jections the same comprising a series of dogs
on the carrier, means for feeding a series of
web-bars between the shed-forming pro-
jections, and means for imparting intermit-
tent travel to the carrier and reciprocation to
the plungers. 85

30. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections, each formed with a central recess, the projections of each row having a staggered relation to the like projections of the next adjacent rows, means for feeding a sheet of material to the shed-forming projections the same comprising a series of dogs on the carrier, means for feeding a series of web-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

31. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for forming a series of longitudinal slits in the sheet of material operated on, means for feeding the sheet of material to the shed-forming projections the same comprising a series of dogs on the carrier, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

32. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for forming a series of longitudinal slits in the sheet of material operated on, means for feeding the sheet of material to the shed-forming projec-

tions, the same comprising a series of dogs on the carrier, means for feeding a series of weft-bars between the shed-forming projections, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

33. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections of the next adjacent rows, means for feeding a series of weft-bars between the shed-forming projections, the same comprising a containing-hopper, a slide moving in the bottom of said hopper and adapted to feed the lowermost bar, and means for imparting reciprocation to said slide, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

34. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections, each formed with a central recess, the projections of each row having a staggered relation to the like projections of the next adjacent rows, means

for feeding a series of weft-bars between the shed-forming projections, the same comprising a containing-hopper, a slide moving in the bottom of said hopper and adapted to feed the lowermost bar and means for imparting reciprocation to said slide, and means for imparting intermittent travel to the carrier and reciprocation to the plungers.

35. A sheet-lathing machine, comprising two series of alternating plungers, a moving carrier, coacting shed-forming projections on the adjacent faces of the plungers and carrier, the projections on the carrier being arranged in rows and each row comprising a number of separated projections arranged in staggered relation to the like projections on the next adjacent rows, means for forming a series of longitudinal slits in the sheet of material operated on, means for feeding a series of weft-bars between the shed-forming projections, the same comprising a containing-hopper, a slide moving in the bottom of said hopper and adapted to feed the lowermost bar, and means for imparting reciprocation to said slide, and means for imparting travel to the carrier and reciprocation to the plungers.

Signed at St. Louis, Missouri, this 22d day of June, 1906.

JOHN D. O'BRIEN.

Witnesses:

FRANK B. McKENNA,
JOSEPH GOEKE, Jr.