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DOUBLE CUTTING BAND SAW MILL.

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3 SHEETS—SHEET 3.

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To all whom it may concern:

Be it known that I, HERMANN G. DITTBENNER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Double-Cutting Band-Saw Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to band-saw mills, and has for its object to provide certain improved devices for use in connection therewith.

More specifically stated, the especial objects of my invention are to provide, first, improved bridging devices for bridging over the space between the log-deck and the carriage without interrupting or interfering with the actions of the lumber-conveying or conveying means, and, second, to provide an improved lumber-conveying device. Both of the said devices are particularly adapted for use in connection with what is known as a "double-cutting band-saw mill"—that is, a sawmill which will cut under both directions of movement of the log-carriage.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view with some parts broken away and others removed, showing a double-cutting band-saw mill embodying the several features of my invention. Fig. 2 is a vertical section taken approximately on the line x-y of Fig. 1, some parts being broken away. Fig. 3 is a detail view in plan, with parts broken away, showing the bridging devices and means for actuating the same; and Fig. 4 is a skeleton view, in side elevation, showing the chain-conveying belts and driving connections therefor.

The numeral 1 indicates the floor of a mill, the numeral 2 a carriage-track, the numeral 3 the log-carriage movable on said track, and the numeral 4 the log-deck.

The numeral 5 indicates the double-cutting band-saw, and the numeral 6 indicates live rollers, which rollers constitute part of the lumber-conveying mechanism and are so located that they feed the lumber through the loop of the band-saw 5.

The above parts are of ordinary or standard construction.

The character z indicates a log. (Shown by full lines on the deck 4 and by dotted lines on the carriage 3.) As will of course be understood, the log on the carriage is moved first in one direction and then in the other past the saw 5, and a board is cut under each movement of said carriage. A board cut from the log when the carriage is moved toward the observer of Fig. 1 will fall under the live roller 6 and be carried in the direction indicated by the arrow marked in connection with said roller in Fig. 1. A board cut from the log under a reverse movement of the carriage will fall onto conveying devices, which constitute one feature of my present invention and which will presently be described.

The lower end of the log-deck 4 is spaced laterally from the adjacent side of the track 2 and adjacent edge of the carriage 3, and, as shown, it rests on its lower edge on a heavy beam 7, which runs parallel to the track 2 and parallel to a laterally-spaced beam 8, which is rigidly supported just outward of but above the adjacent rail of said track by means of a depressed or lower deck-section 9. The lower end of the log-deck 4 terminates approximately on a level with the platform of the log-carriage 3. In Fig. 1 the numeral 10 indicates diagrammatically the position of the so-called "nigger," which, it will be noted, works between the beams 7 and 8 at the central portion of the deck 4.

Working between the beams 7 and 8 on each side of the nigger 10 is an endless lumber-conveyor or conveying-belt, made up of a plurality of parallel and closely-positioned sprocket-chains 11, which run over sprocket-wheels 12, secured in series on short transverse shafts 13, suitably mounted on the beams 7 and 8 or parts supported therefrom. The forward shafts 18 of each conveyor 11 are also provided with sprockets 14, over which run suitably-driven sprocket-chains 15, which impart the required movements to the said conveyers. A pair of bridging-arms 16 are pivoted to
the timber 7 just below the delivery end of
the deck 4. The pivoted ends of these arms
are protected by guard-plates 17, rigidly
secured to the deck 4, as best shown in Fig.
2. The bridging-arms 16 are thus mounted
for oscillating movements in a horizontal
plane, and their free ends are adapted to be
thrown at a right angle to the track 2 on a level
with and in close proximity to the platform
or head-blocks of the log-carrige, as shown
in the drawings. When the arms 16 are thus
projected or turned, they form a continu-
ation, as it were, of the delivery end of the log-
deck, and as they stand a considerable dis-
tance above the tops of the conveying-belts
they permit the same to continue their ac-
tion of moving forward the board which was
cut from the log under the movement of the
log-carrige in a direction away from the ob-
server of Fig. 1. When the said arms 16
stand in their operative positions, as shown,
their free ends rest upon bearing-lugs 18 on the
top of the beam 8. As shown, cam plates
or surfaces 19 incline outward and downward
from the rest-lugs 18 and serve to induce the
upward movements of the free ends of said
arms for proper engagement with the rest-
lugs 18 in case the said arms should be pressed
downward by the log or for other cause while
they are being moved into their operative po-
sitions. At their pivoted or outer ends, the
arms 16 are provided with short extensions
20, which are connected by a link 21. One
of the arm extensions 20 or one end of the
link 21 is connected by a pitman or rod 22 to
the piston-rod 23 of a small fluid-pressure mo-
tor 24, which, as shown, is supported by the
beam 7, but which may be supported in any
suitable way. The said fluid-pressure motor
or engine 24 may of course be controlled in
any suitable way. In Figs. 1 and 3 the pis-
ton-rod 23 is shown as projected to its extreme
position. It is of course evident that when
the piston-rod 23 is drawn inward or into the
cylinder of the motor 24 the two bridging-
arms 16 will be oscillated into the positions
indicated by dotted lines in Fig. 3, in which
position they are entirely out of the way and
will not interfere with the dropping of the
lumber or boards from the log on the log-car-
rige onto the conveying-belts 11. When the
log-carrige moves rearward or away from the
observer with respect to Fig. 1 and when it
has carried the log in that direction past the
saw, the board cut from the log will fall onto
the conveying-belts 11 and will be fed forward
or toward the observer of said Fig. 1. At
this time, as already stated, the bridging-
arms 16 will be held in their dotted-line posi-
tions, as shown in Fig. 3. Should this move-
ment of the carrige, however, complete the
sawing of the log carried thereby, another log
must be quickly placed on the carriage, and
to accomplish this the bridging-levers are
quickly thrown into their operative positions
and another log is released from the log-deck,
which, rolling down over the delivery end of
said deck, will cross over the said bridging-
arms to the carriage, where it will be caught
and held in the usual way. It will thus be
seen that the log may be moved across the
bridging-levers to the carriage even before
the conveying-belts 11 have carried the last
piece of the previously-sawed log out from
under the said bridging-arms, so that no time
whatsoever is lost and the lumber-feeding de-
vices are permitted to constantly run.
It is here important to note that the bridg-
ing-levers in moving from their operative po-
sitions into their inoperative positions move
in the same general direction in which the
new log makes its first movement with the
log-carrige. Hence even if some portion of
the log or a projection thereof should catch
these bridging-levers or one thereof no dam-
age would be done, since under the yielding
action permitted by the air motor or engine
they would simply be forced toward their in-
operaive positions with an abnormally rapid
movement. Stated in another way, the above-
noted advantage is gained by arranging the
bridging-levers so that they move pivotally
from their projected or operative position to-
ward the saw and from their normal or inop-
erative position away from the saw.

The plurality of chains which make up the
conveying-belts 11 afford an extremely effi-
cient conveying mechanism for the lumber.
In Fig. 2 the numeral 25 indicates an ordi-
nary combined log stop and kicker of what is
known as the “Kline” type and which is
shown as connected to and operated by the
piston-rod 26 of a fluid-pressure motor 27,
shown as secured to a depending beam 28 of
the floor 1. This device, however, forms no
part of my present invention.

What I claim, and desire to secure by Let-
ters Patent of the United States, is as fol-
lows:
1. In a sawmill of the character described, the combination with the log-deck and car-
rige, of a pair of bridging-arms pivoted for
swinging movements in a horizontal plane,
and means for moving the same to and from
an operative position in which they bridge
the space between the said deck and carriage,
substantially as described.
2. In a double-cutting band-saw mill, the
combination with a log-deck, saw and car-
rige, of a pair of bridging-levers pivoted at
the delivery end of said deck for swinging
movements in a horizontal plane, means for
moving said levers to and from an opera-
tive position in which they bridge the space
between the said deck and carriage, and a
lumber-conveyor working below said bridg-
ing-levers, substantially as described.
3. In a double-cutting band-saw mill, the
combination with a log-deck, saw and car-
rige, of a pair of bridging-levers pivoted at
the delivery end of said deck for swinging
movements in a horizontal plane, rests for
the free ends of said bridging-arms adjacent
to the said carrige, means for moving said
bridging-arms into operative positions with their free ends resting upon said rests, and into inoperative positions below said deck, and lumber-conveying mechanism working below said bridging-arms, substantially as described.

4. The combination with a log-deck, saw, carriage and lumber-conveyer, of bridging-levers for bridging the space between said deck and carriage, which levers are adapted to yield in the general direction in which the log may be moving, in case they are struck by the said log, substantially as described.

5. The combination with a log-deck, a saw, a carriage and a lumber-conveyer, of bridging-levers for bridging the space between said deck and carriage, which levers are mounted to swing or oscillate in a horizontal plane and are moved from their operative to their inoperative positions in the same direction in which said carriage makes its first movement after receiving a log, substantially as described.

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

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Witnesses:
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