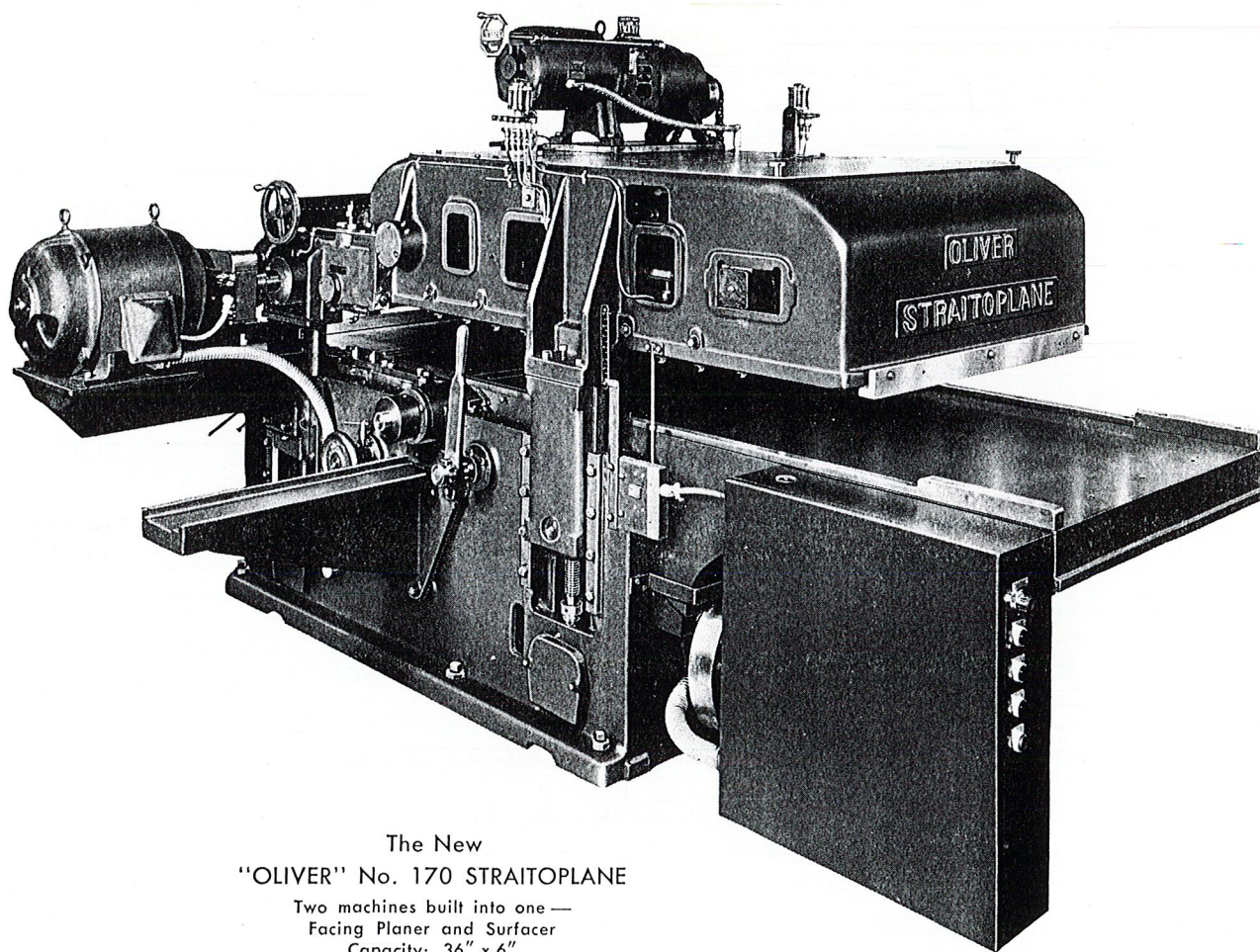




*"Every User
Is a Booster"*

"Oliver" STRAITOPLANE No. 170

"STRAITOPLANE" IS A NEW NAME TO DESIGNATE THIS MODERN WOOD-WORKING MACHINE WHICH MAY BE DESCRIBED AS AN "OUT-OF-WIND DOUBLE STRAIGHT SIDE PLANER" OR POWER FEED FACER AND SINGLE SURFACER BUILT INTO ONE MACHINE



The New
"OLIVER" No. 170 STRAITOPLANE

Two machines built into one —
Facing Planer and Surfacers
Capacity: 36" x 6"

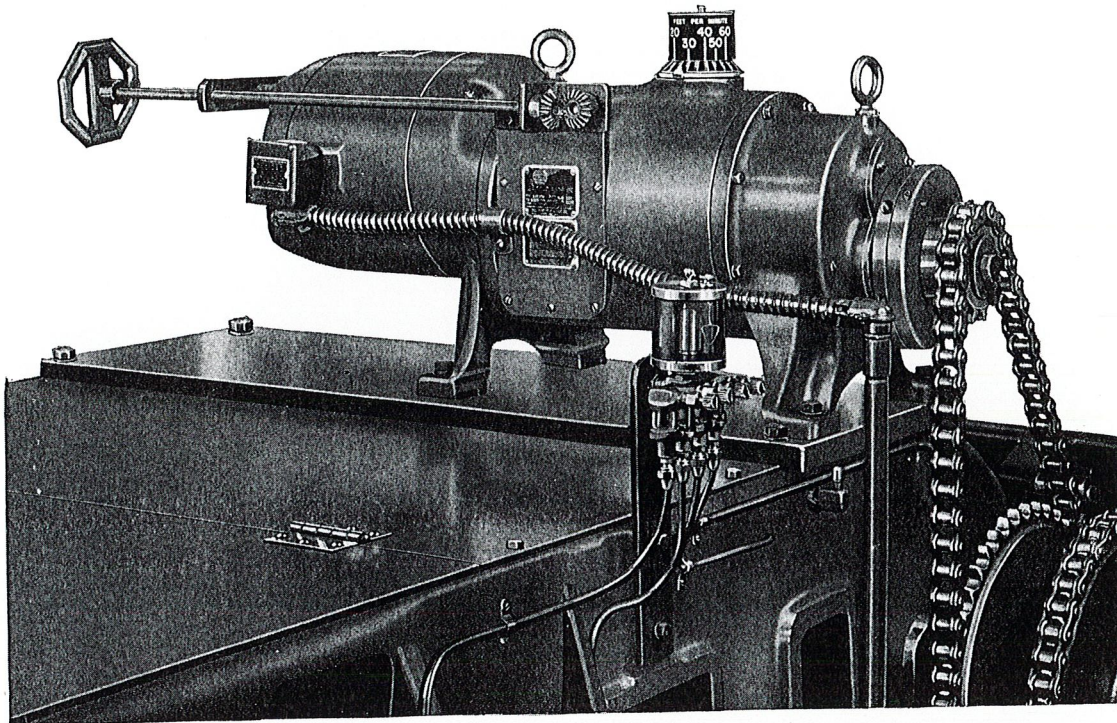
Speeds Delivery!
Compact and Dependable!
Powerful and Efficient!

Manufactured by
Oliver Machinery Company

Grand Rapids, Michigan, U. S. A.

BRANCH SALES OFFICES:

New York, Atlanta, Pittsburgh, Cleveland, Detroit, Chicago,
Indianapolis, St. Louis, Minneapolis, Denver, Salt Lake City,
Seattle, Portland, San Francisco, Los Angeles.



Above picture shows the Variable Speed motor unit mounted on top of infeed housing showing chain drive for feed mechanism.

Purpose

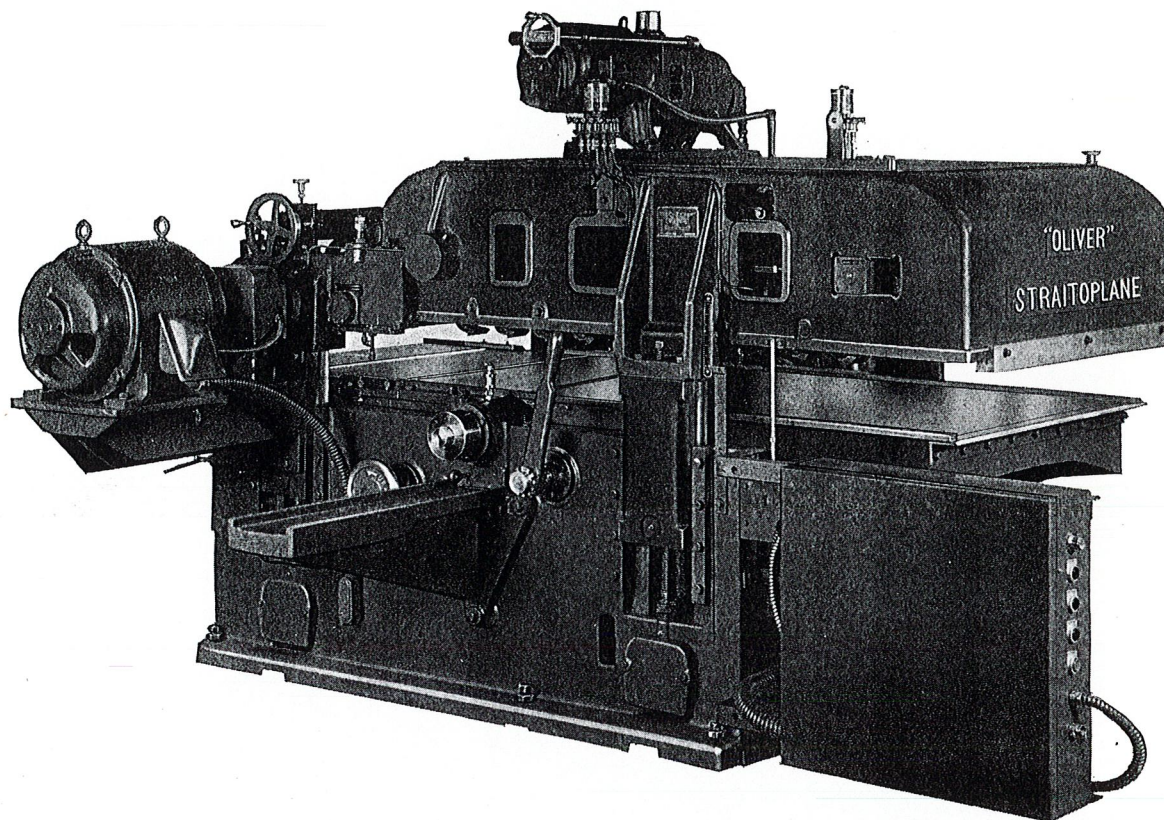
The "Oliver" Straitoplane is a combination of two machines or operations, namely, a Power Feed Facing Planer and a Single Surfacers. When used to machine moderately warped or twisted material it will take boards up to 8 feet long, plane them on both sides, reduce them to uniform thickness and remove the warp or wind to produce boards that are straight and flat. It may be used as a Double Roughing Planer, to take boards of any length, and while in this case it will not necessarily remove all the warp or wind, it does have the special advantage over the ordinary roll feed double planer in that it will not split cupped or warped boards, hence will show a worth while saving in lumber. Most progressive wood-working plants have come to realize that a fundamental in the early stages of manufacture is the straightening or leveling of the stock, and that where this is done the succeeding machines may be set to a finer degree, run at a faster speed and produce a more accurate product. This feature is especially important in the edge gluing of panels, especially where high frequency gluing equipment is used. The economy of the Straitoplane is beyond question. Not only is the initial cost well in line with the combined cost of two

machines, but it will continue to pay dividends in the saving of labor, material, floor space, trucking, re-handling of stock and the improvement of subsequent machine operations. The consensus is that the STRAITOPLANE is more efficient in every way than the two individual machines, for the reason the two operations being performed almost simultaneously, there is greater assurance the strains will be removed equally from both sides and the stock will remain straight. The machine is massive in construction and is provided with ample power and stamina to operate continuously up to full 36-inch capacity feeding either single boards or panels or narrow stock in multiples.

Capacity

This machine will plane warped or straight stock simultaneously on both sides up to 36 inches wide and from $\frac{1}{2}$ inch up to 6 inches thick with assurance that warp or wind up to $\frac{1}{4}$ inch can be planed out and the material reduced to the desired uniform thickness in one operation — once through the machine. Variable rate of feed from 20 to 60 feet per minute is regularly furnished, but other speed ratios can be easily arranged to suit purchaser's requirements on special order. Pieces as short as 12 inches, when feeding con-

OLIVER MACHINERY COMPANY  GRAND RAPIDS, MICHIGAN, U.S.A.
"OLIVER" NO. 170 STRAITOPLANE—FULLY PATENTED



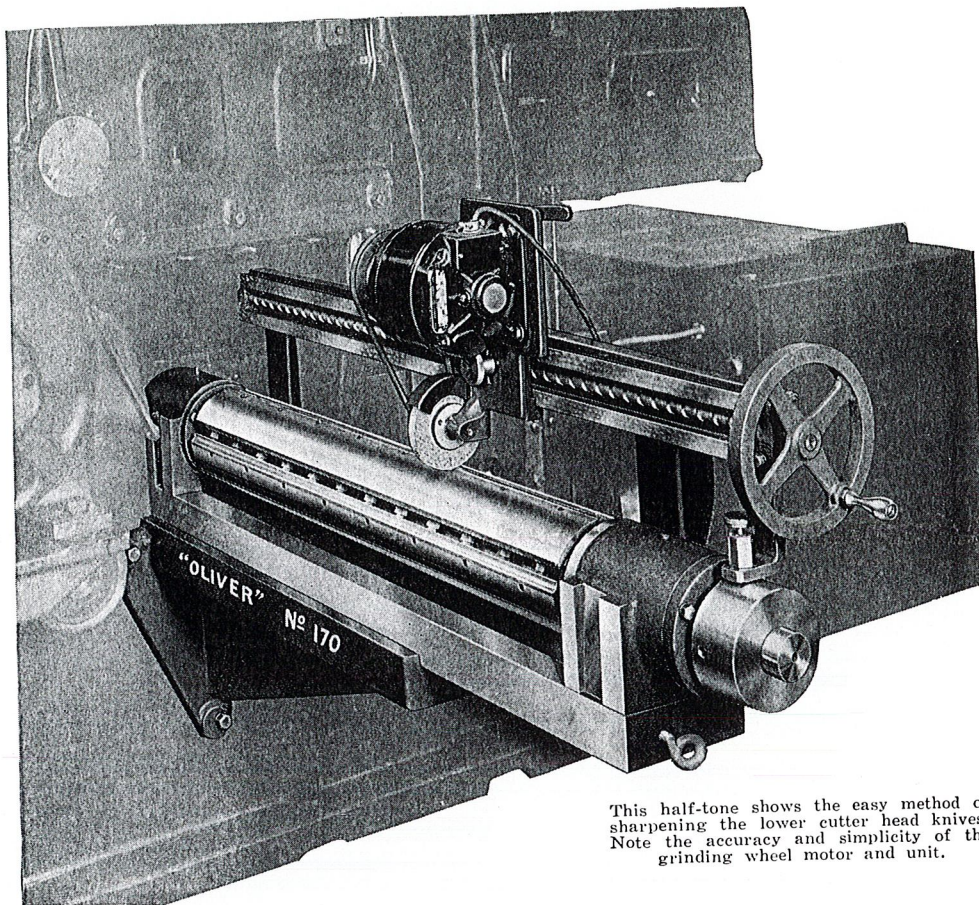
The straitoplane can be supplied for a conveyor hookup as shown above. This can take lumber direct from the cutoff saw, finishing it to proper thickness, which eliminates extra handling, thus producing greater savings in time and labor.

tinuously, and as short as 16 inches, when feeding one at a time, can be planed both sides. The operator simply feeds the board a short distance until the automatic tension fingers grip the stock and is then free to start another board making an endless and continuous feeding of stock through the STRAITOPLANE. Variable rate of speed being possible, it is obvious production can be speeded up to suit stock and requirements. The motors are of ample capacity and can be depended on to give efficient service, making it possible to take a cut one-half inch in depth once through if necessary. The Sectional Infeed Roll and the sectional Chip Breaker, acting with the "sensitive-yet-positive" multiple contact Conveyor Feed, enables many narrow strips to be surfaced simultaneously, greatly increasing the production of this machine.

Infeed Table

Is a one-piece semi-steel casting of arched ribbed construction. The actual feeding surface is $36\frac{1}{4}$ inches wide by 72 inches long.

For conveyor hookup this table is shortened by 18 inches and is supplied with a steel lip. A conveyor belt can be placed in position to carry stock into the machine. The end next to the lower head is fitted with a steel plate. This table is supported by inclined bed wedges and rides on dove-tailed gibbed ways with vertical adjustment by means of a ratchet lever on the left side of the machine, convenient to the operator. The object of raising or lowering this table is to get proper thickness of cut on the under surface of the stock being fed; thus the thickness of the bottom head cut can be varied by merely operating the ratchet lever which operates the table without making any other adjustments on the machine; this simplifies the set up of the machine for any thickness of cut desired. The infeed table unit, as a whole weighs approximately 2,300 pounds, but the construction of the raising and lowering mechanism is such as to require very little exertion. High pressure lubricant fittings keep the hoisting parts well greased.



This half-tone shows the easy method of sharpening the lower cutter head knives. Note the accuracy and simplicity of the grinding wheel motor and unit.

Outfeed Table

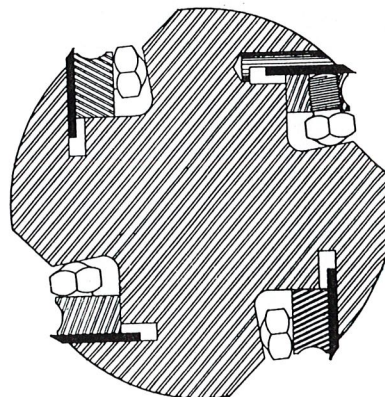
The bed of the outfeed table is a one-piece well ribbed semi-steel casting with three finished plates bolted on the top of the bed to form an actual feeding surface of $36\frac{1}{4}$ inches wide, by 46 inches long. In finished pockets at the sides of the outfeed table frame, needle bearings support the two lower feed rolls with adjustment for alignment. The outfeed table frame is supported by an inclined bed wedge of one-piece semi-steel casting in finished ways and is easily adjusted vertically to the cutting edge of the knives by means of a hand wheel conveniently located on the left, or operating side of the machine. This table lines up with the cutting diameter of the lower cylinder and requires adjustment only after the knives have been sharpened. This outfeed table unit weighs approximately 1,400 pounds.

Cutter Heads

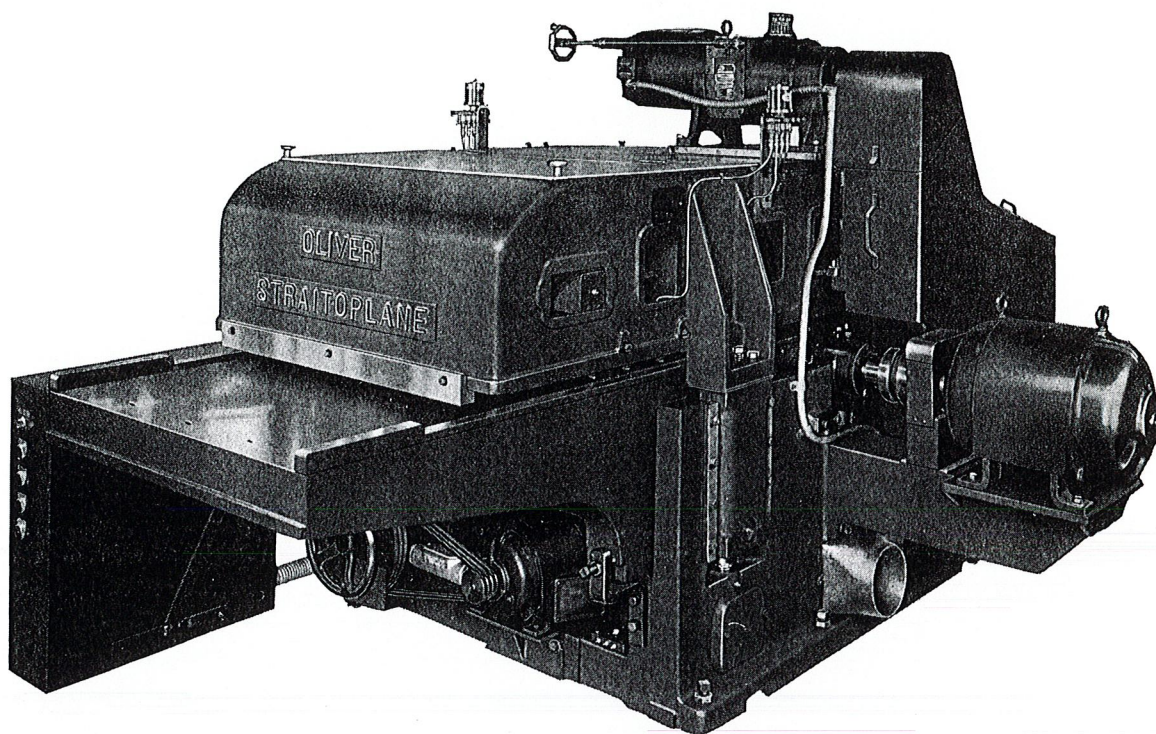
Each machine is arranged for direct coupled motors. A 15 H.P., 3600 R.P.M. motor is coupled to the bottom head and a 15 H.P., 3600 R.P.M. motor is coupled to the top head.

Feed Drive

A 3 H.P. adjustable speed motor unit is mounted on top of infeed housing and connected to feed works by heavy duty roller chain. The motor sprocket is arranged with shearing pin to prevent overload or accident damaging the unit. These pins are easily replaced.



Cross sectional view of top and bottom cylinders which have 6-inch cutting diameter and are fitted with four knives with hard steel chipbreaker for each knife.



“Oliver” No. 170 Straitoplane — right side showing exhaust connection for lower head.

Feed Rolls

The outfeed table carries two smooth cast iron ground rollers extending the full width of the machine. Each end is supported by two large needle bearings which allow the rolls to rotate freely. The upper outfeed housing bolts to the conveyor and is raised or lowered by four powerful screws operating in rectangular pillars supported by adjustable gibbed ways. The top infeed roll ahead of the top cutter head is sectional, having 2-inch sections with 16 springs in each section to give individual vertical yield for each section in addition to the adjustable vertical yield of the entire sectional roll unit. The design of chain drive gives free floating action to sectional feed roll. The top outfeed roll immediately follows the pressure bar and is one-piece, machined, cast iron smooth roll extending the entire width of the machine and rotating in large needle bearings.

Cutter Heads

Both upper and lower cutter heads are 6 inches in cutting diameter, fitted with four “Oliver” Super-Tungsten thin knives which are positively the best obtainable. The cutter heads are made of forged steel of very high carbon and of large diameter assuring rigidity and perfect alignment at any speed. Provision is made for easy setting of the knives, also for grinding with the top cutter in place. The

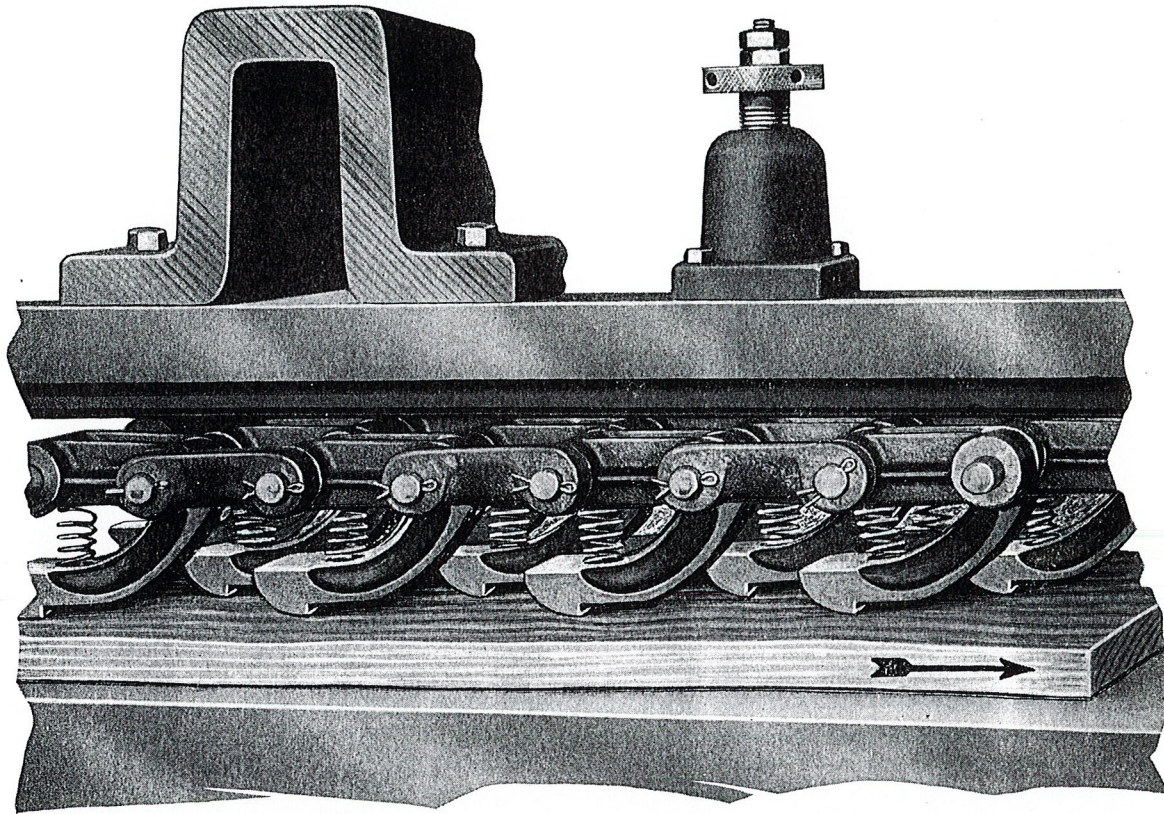
bottom cutter head is clamped in the frame with tapered wedges which hold the cylinder and bearings securely in place. These wedges are released by removing a nut so that the cutter unit can be drawn out towards the left side of the machine, ready for setting or grinding the knives while resting on the sliding bracket which is securely fastened to the frame.

Mechanical Controls

Complete control of the mechanism is located at the front end left side of the machine, so the operator can stop and start the heads or feed and also adjust vertically both tables as well as the entire top section. The infeed table is adjusted by means of a hand crank with a ratchet device. Moving the crank to the left raises the table, to the right lowers it. To the left of the hand crank is a hand wheel that controls the vertical movements of the outfeed table. Turning this wheel to the left lowers the table; a right hand movement raises it.

Electrical Control

Head motors and feed motors are controlled by a magnetic contactor in box at place most convenient to the operator. Push button start stations operate the magnetic contactors for each motor. An emergency stop button to stop all motors is placed in the most accessible



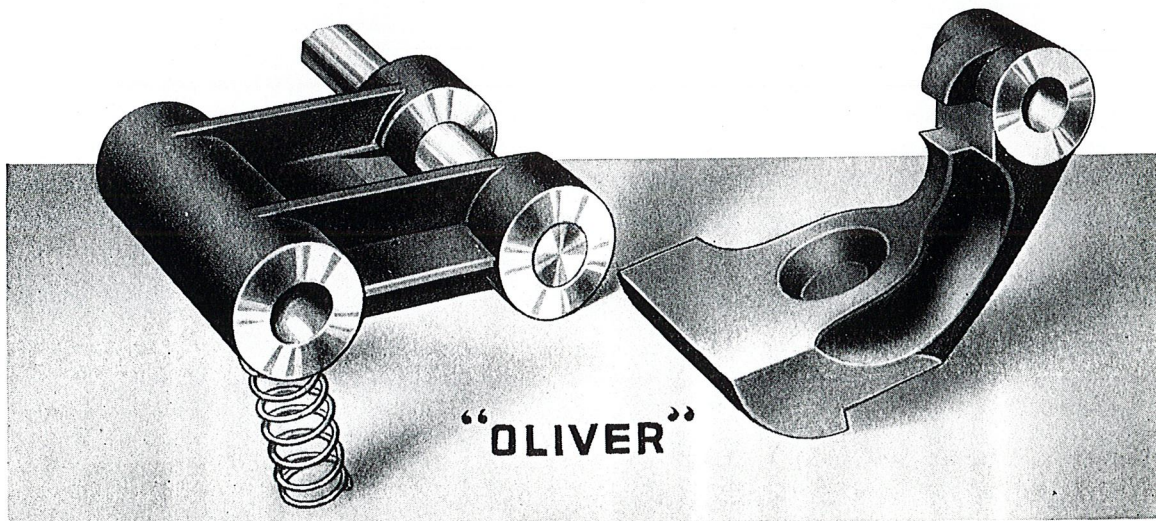
This clearly illustrates the “sensitive-yet-positive” multiple contact feed on the “Oliver” No. 170 Straitoplane.

position. Feed motor is controlled independently with separate stop button interlocked with emergency button. Raising and lowering motor has separate push buttons located at point convenient to thickness scale. All wiring is enclosed in flexible or solid conduit.

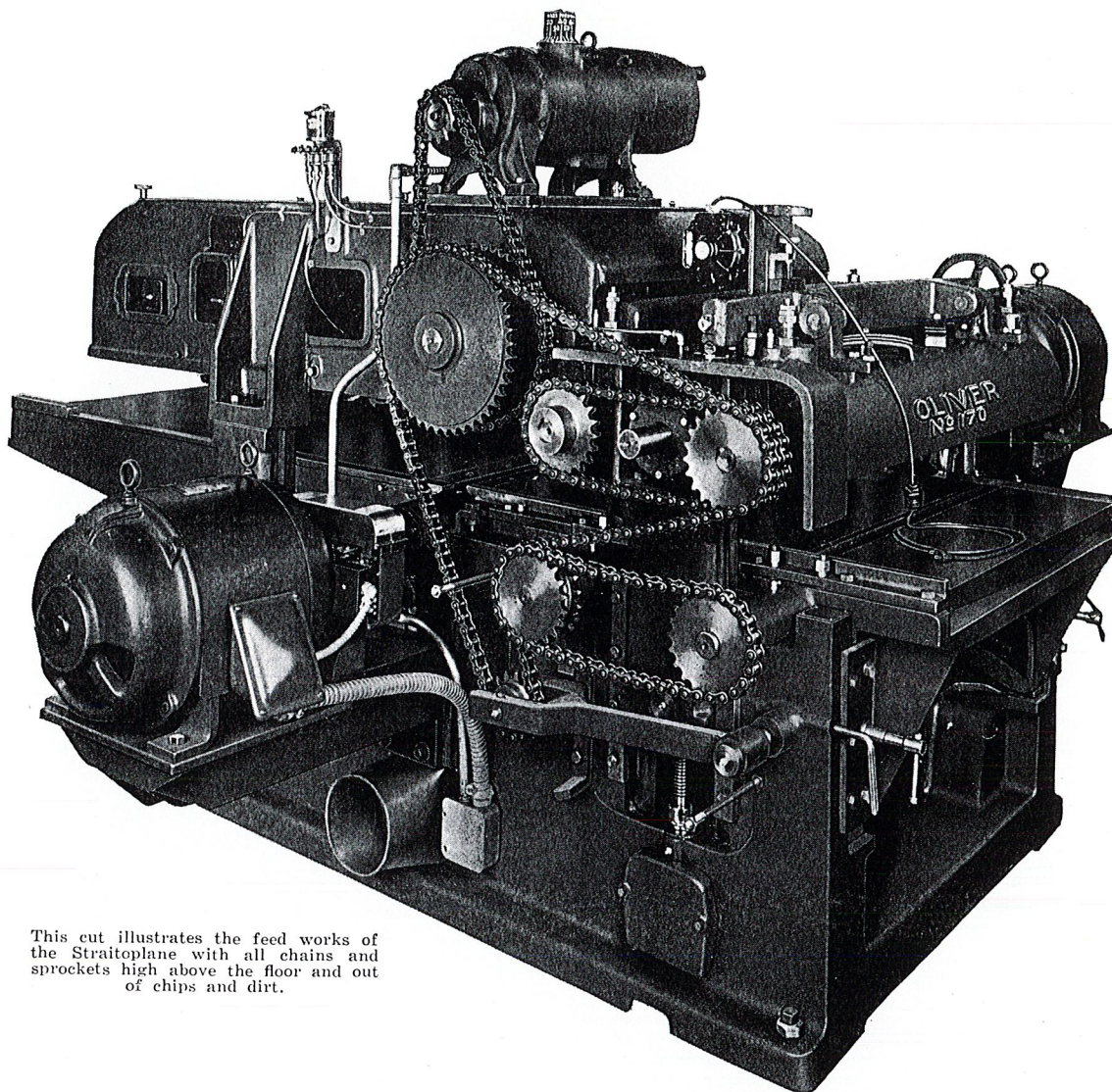
Bearings

Ball bearings for cutter heads are precision

type. Two double row ball bearings are located at each end of each cutter head, so that each head is actually operating on four rows of ball bearings. Other bearings throughout the machine are of the needle roller bearing type. All cutter head bearings and top roll bearings are lubricated by thin oil gravity type automatic lubrication. All other bearings have pressure gun grease lubrication.



Close up of the chain links, toes and spring of feed chain enclosed in the top section.



This cut illustrates the feed works of the Straitoplane with all chains and sprockets high above the floor and out of chips and dirt.

Top Section

The name "top section" applies to two semi-steel frame castings securely bolted together. It is supported by four rectangular pillars fitted to the main frame in gibbed ways and arranged to move vertically in unison by power, supplemented by a hand wheel located under the infeed table, giving close setting for the finished thickness desired. The front top section supports the "Sensitive-yet-Positive" Multiple Contact Conveyor. The top feed rolls and the top cylinder unit together with the chip breaker and pressure bar are built into the rear top section. The vertical movement in either direction is indicated by a scale and pointer conveniently visible to the operator. A limit switch is provided to prevent the top section from lowering into the cutterhead.

Conveyor

This conveyor is of the wide chain mat type having cushion spring toes suspended from each link in such a manner as to assure a very "Sensitive-yet-Positive"

Multiple Contact Feed. The shape and arrangement of the toes are such as to have exactly the same effect as if the boards were being fed over a hand planer and jointer by means of human hands. All essential parts of the conveyor are made of semi-steel. Positive takeup is provided by means of the idler shaft bearings held by boxes which in turn are supported in a slot arrangement whereby adjusting screws tighten or loosen the tension on the conveyor chain. The toes of the conveyor system will feed the strips of stock with a very light pressure, not more than human hands would exert when feeding, therefore there is no tendency to bend or spring the board from its natural shape, so that the two planed faces present straight, smooth surfaces.

Feed Works

The feed driving mechanism is enclosed by a sheet metal case attached to the frame and located at the right rear side of the machine.

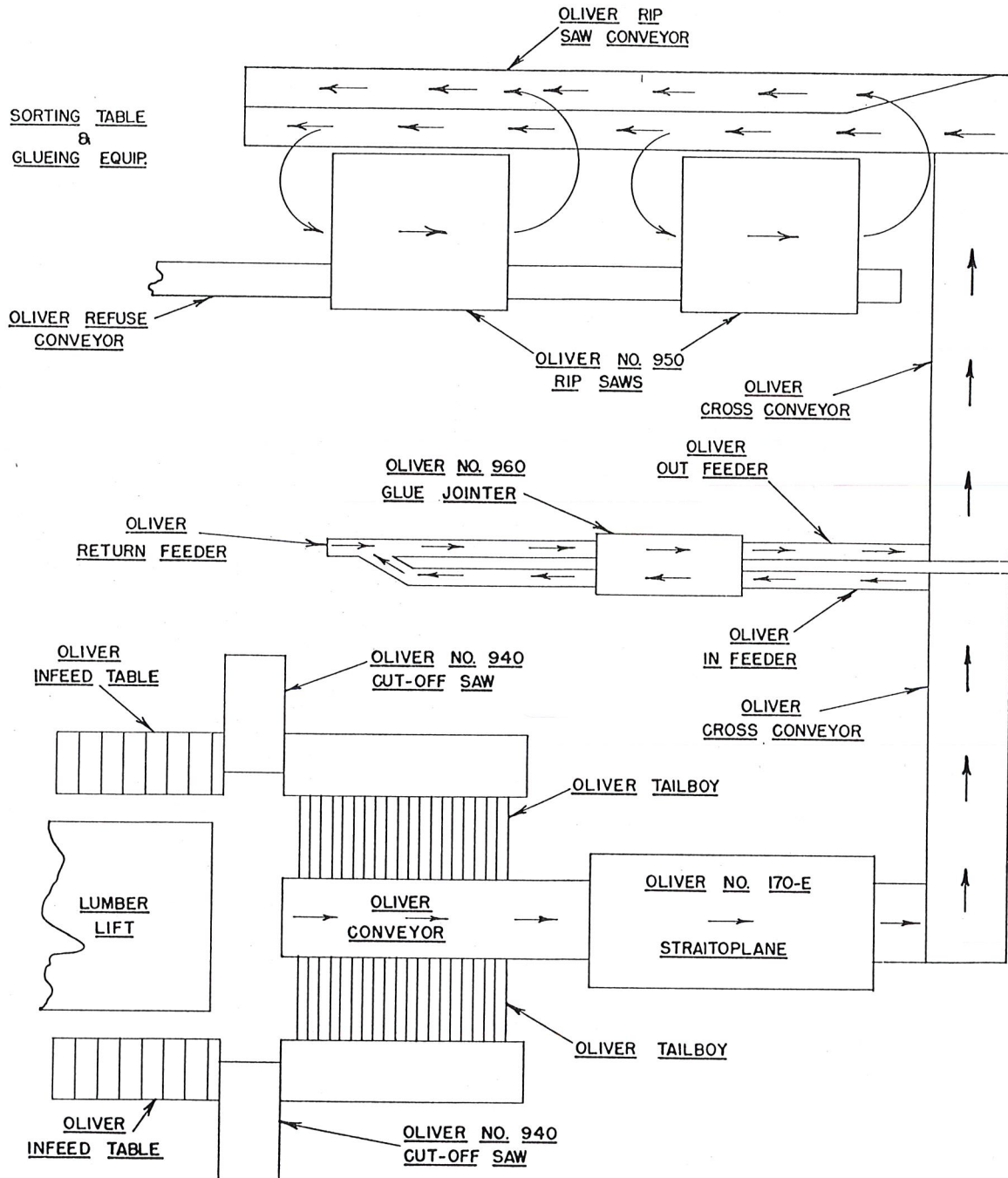
The feed works, as shown in the above picture with the case removed, is controlled by an adjustable speed motor unit mounted on the top of the infeed housing of the Straitoplane giving infinitely variable speeds

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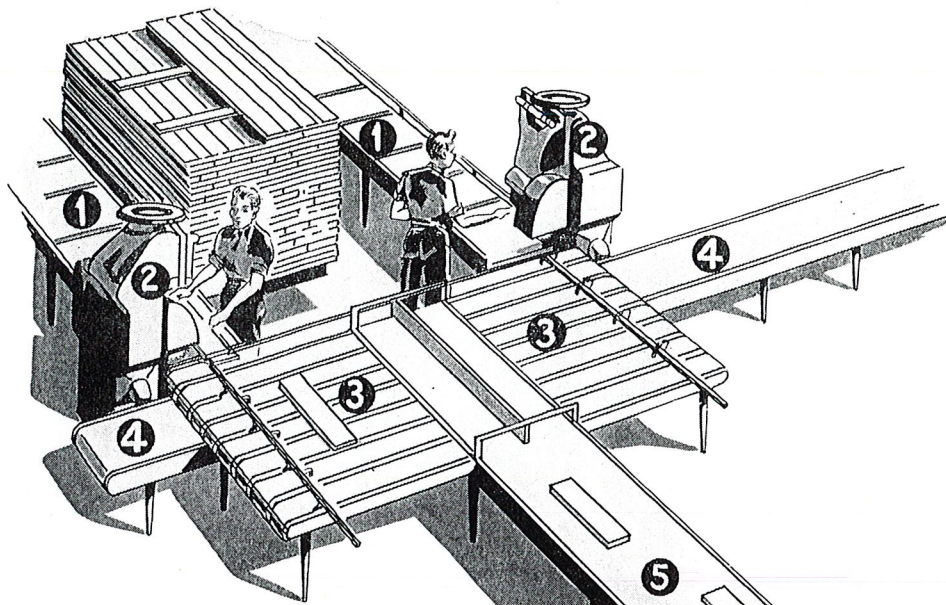
from 20 to 60 F.P.M. On special order we are able to increase this by approximately 50%.

The sprocket of the feed unit drives through an overload shear pin arrangement and, by means of a

chain, engages the sprocket gear which drives the conveyor chain. The second, or outboard gear, drives a chain which transmits power to all of the feed rolls. The rate of feed is adjusted by means of a hand wheel



The above illustrates a typical Mill Room layout that has been completely conveyorized by use of "Oliver" equipment. In this modern setup the "Straitoplane" receives warped, uneven lumber from the cut-off saws and dresses the stock down to the desired thickness and places the top side smooth, straight and parallel with the lower side. This eliminates the use of one machine and the extra handling.



KEY TO CONVEYORIZED
ROUGH MILL LAYOUT

- 1—Oliver No. 94-T Infeed Table
- 2—Oliver No. 94 Cut-Off Saw
- 3—Tailboys
- 4—Scrap Conveyor
- 5—Infeed to Straitoplane
- 6—Oliver No. 170 Straitoplane

with dial indicator extending from the variable speed unit and accessible from the left side of the machine. An Idler sprocket supported by an arm automatically compensates for the difference in chain lengths required in different thickness set-up when planing.

Feed Works — Raising and Lowering

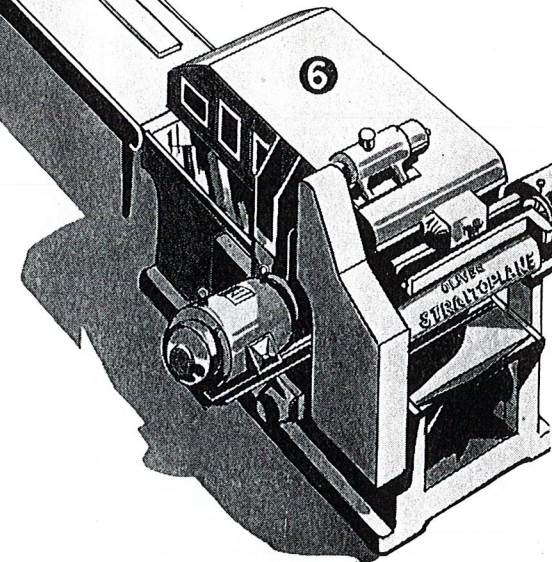
A motor located under the infeed table raises or lowers the Top Section containing the conveyor. This is operated by means of a V-belt arrangement driving a shaft, running the entire length of the base, which in turn engages cross shafts through means of a worm and gear. These cross shafts operate bevel gears at the four corners of the base raising and lowering the Top Section. To facilitate close adjustment a handwheel is provided.

Main Frame

Is an exceptionally rigid semi-steel casting with heavy ribs, cored sides, partitions and exhaust chute for the lower head all cast in one piece weighing approximately 4,000 pounds. This frame completely supports all the other parts of the machine on finished surfaces. The base is planed to give a machined foundation support of $9\frac{1}{2}$ inches wide, 72 inches long on each side of the base. Heavy leveling screws at the base of frame facilitate original leveling of machine and make simple the job of maintaining the "Straitoplane" in proper alignment. The mechanism for raising or lowering the feed work slides in gibbed ways and is cast integral with the frame.

Sharpening Knives

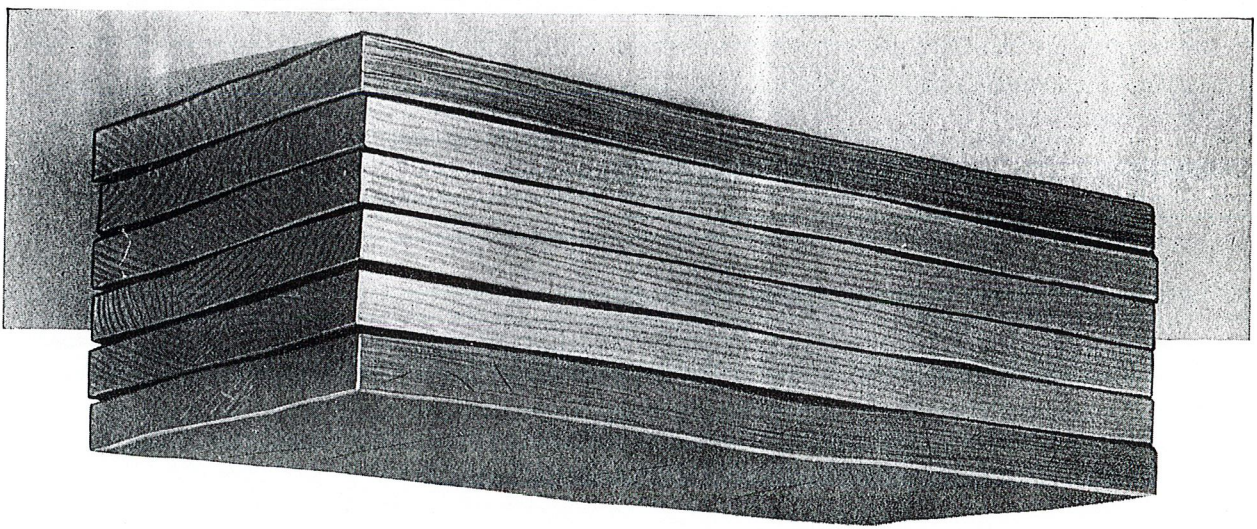
All "Oliver" STRAITOPLANES are equipped with knife grinding motor and wheel unit which securely



clamps in adjustable gibbed ways on a grinding bar. This bar is hinged on steel pins directly over the upper knives which allow it to be swung back so the dust chute can be attached. There is a coarse thread screw in the center of this bar which is turned by means of a hand wheel. This screw moves the grinding head back and forth across the knives. A steel tapered plunger in a stop bracket bolted near the end of the cylinder holds the knives in the correct position for sharpening.

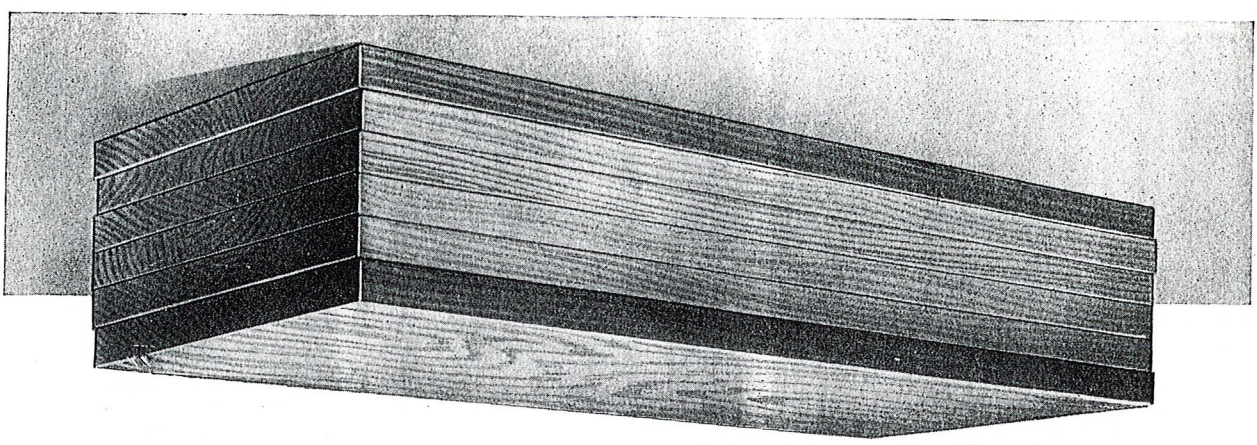
To sharpen the lower knives remove the wedges that hold the knife cylinder bearings in the frame and pull out the entire lower unit on a sliding way bracket attached to the left side of the frame. On the sides of the two cylinder bearings are four tapped holes which line up with holes drilled in the grinding bar; after fastening this in place with four cap screws attach the knife sharpener on the gibbed ways and adjust for a light cut, then start the grinding motor, next turn the hand wheel which feeds the grinding unit back and forth across the knives. After grinding the knives on

the lower cylinder disengage the grinding bracket and be sure to push the cylinder back until it hits the stop and engages the motor coupling. In the grinding bracket a knurled locking nut securely holds the adjusting screw in the desired position in the center of the grinding bracket which is slotted so that it allows the entire grinding unit to be moved up and down to compensate for the different settings of the knives.



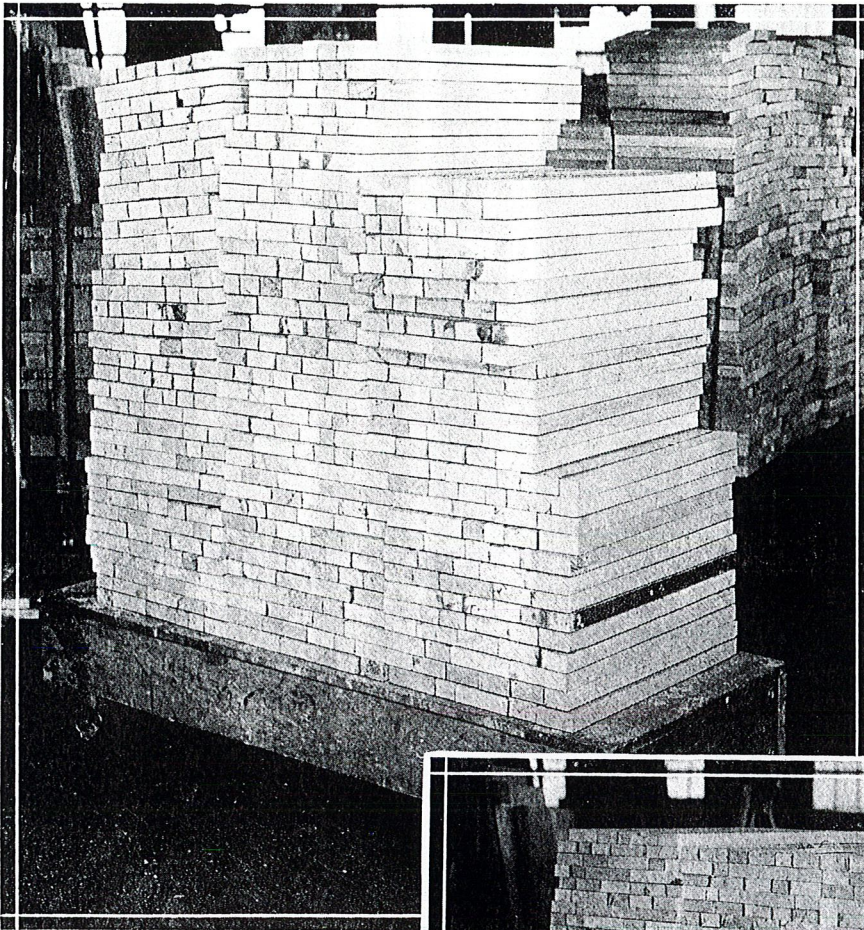
Before Straitoplaning.

The above is a pile of four quarter stock of average type such as usually comes from the cut-off and ripping operations. Note that these boards are warped, on the wind both longitudinally and crosswise. The only former way of getting perfect straight boards out of a pile like this was to face joint first then plane to thickness, but now, the "Oliver" STRAITOPLANE will perform these two operations at one and the same time, producing perfect straight boards of uniform thickness, because the front part of the STRAITOPLANE will face joint and the rear part will plane to uniform thickness once through the machine, resulting in a big saving of lumber and labor in the planing department.



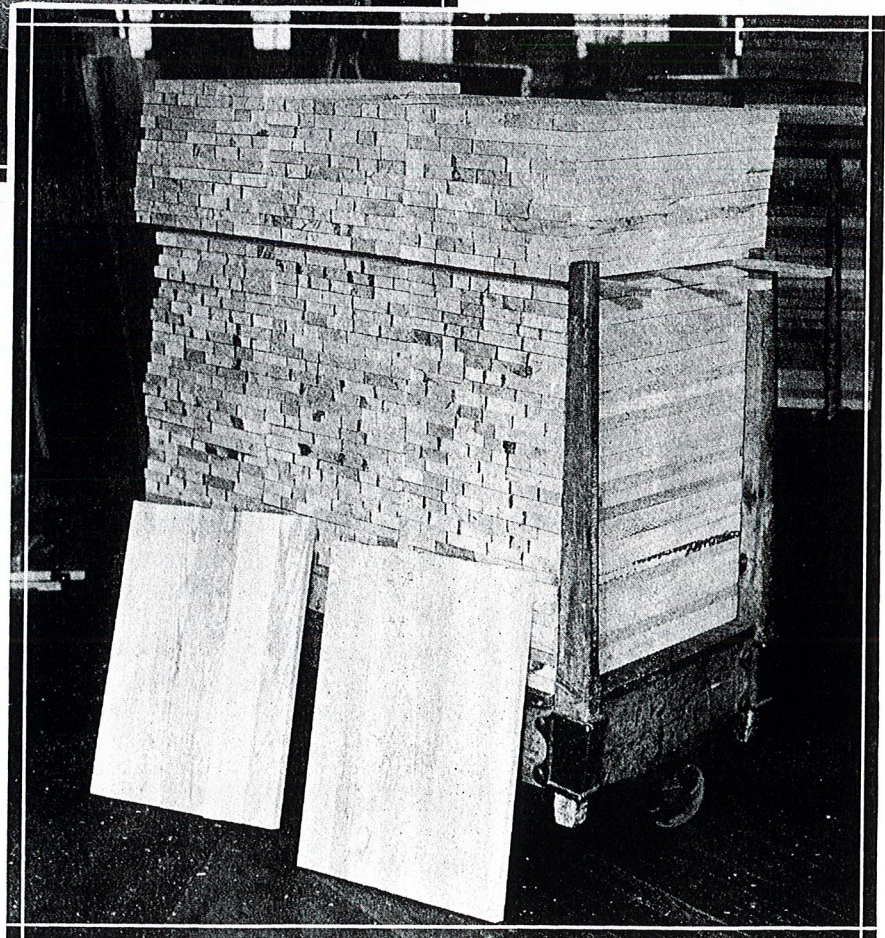
After Straitoplaning.

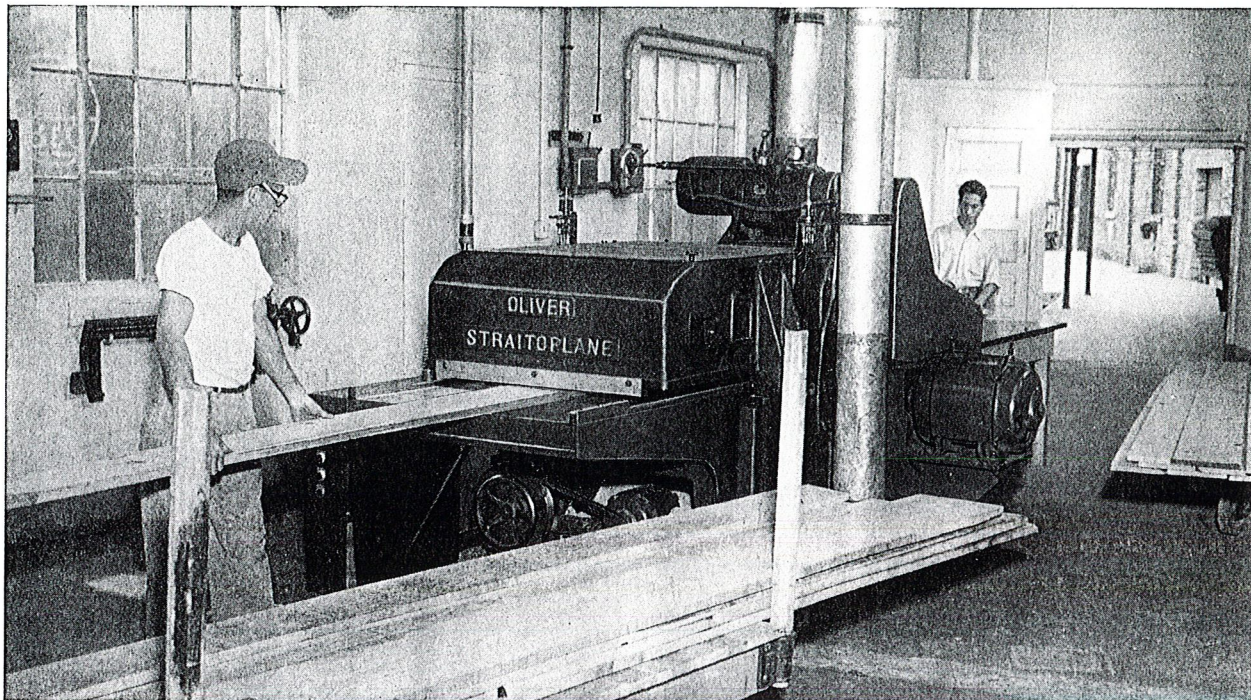
This photo shows the same pile of boards after being planed in the "Oliver" STRAITOPLANE once through. Note the perfectly smooth, flat, parallel surfaces top and bottom. All thickness dimensions are uniform and accurate.



This halftone shows glued-up panels brought to the “Oliver” Straitoplane directly from the gluing operation. This stock is warped, uneven, “out of wind” and of various thicknesses as the pieces are glued together without any planing. The Straitoplane will, with one pass, make all these panels straight and of uniform thickness.

This picture shows the same pile of lumber after being run once through the “Oliver” STRAITOPLANE. Note the straight parallel surfaces, how evenly the stock piles, every piece smooth and straight.





“Oliver” Straitoplane working on long stock at the plant of the Frank Paxton Lumber Company at Chicago, Ill.

The following is a partial list of approximately 100 users of the “Oliver” Straitoplane. Note the various types of businesses in which this wonderful machine is creating large savings in lumber and labor:

Albert Furniture Company, Shelbyville, Ind.....	1	Owosso Manufacturing Company, Benton, Ark.....	1
The Baldwin Company, Cincinnati, Ohio.....	1	Frank Paxton Lumber Company, Chicago, Ill.....	1
C. F. Braun Company, Alhambra, Calif.....	1	Frank Paxton Lumber Company, Kansas City, Mo.....	1
E. L. Bruce Company, Memphis, Tenn.....	1	Pekin Wood Products Company, Helena, Ark.....	2
Brunswick-Balke-Collender Co., Muskegon, Mich.....	1	Princeville Furniture Co., Princeville, Quebec, Canada..	1
Crawford Furn. Mfg. Corp., Jamestown, N. Y.....	1	R. C. A. Victor Co., Owen Sound, Ont., Canada.....	1
Delker Bros. Mfg. Co., Inc., Henderson, Ky.....	1	Red Lion Cabinet Company, Red Lion, Pa.....	1
Dettenborn Woodworking Co., Hartford, Conn.....	1	Remington Arms Company, Ilion, N. Y.....	2
Dixie Furniture Company, Lexington, Ky.....	1	Rhyne Lumber Company, Newport, Tenn.....	1
Globe Wernicke Company, Norwood, Ohio.....	1	St. Croix Manufacturing Co., Bayport, Minn.....	1
W. H. Gunlocke Chair Company, Wayland, N. Y.....	1	Saunders, Howell & Co., Carbonear, Newfoundland..	1
B. F. Huntley Furniture Co., Winston Salem, N. C.....	1	G. I. Sellers & Sons Company, Elwood, Ind.....	1
Jamestown Lounge Co., Jamestown, N. Y.....	1	Stanley Furniture Company, Stanleytown, Va.....	2
The Keller Manufacturing Co., Corydon, Ind.....	1	Storkline Corporation, Chicago, Ill.....	2
Kullberg Manufacturing Co., Minneapolis, Minn.....	1	Stow-Davis Furniture Co., Grand Rapids, Mich.....	2
Los Angeles Period Furn Co., Los Angeles, Calif.....	1	E. C. Streater Company, Spring Park, Minn.....	1
Luger Furniture Company, North St. Paul, Minn.....	1	Sylvania Electric Products, Inc., High Point, N. C.....	1
The Mengel Company, Inc., Louisville, Ky.....	4	Texas Hardwood Manufacturing Co., Dallas, Texas.....	1
Merrill Transport, Portland, Me.....	1	Thomasville Chair Company, Thomasville, N. C.....	7
Mississippi Products Company, Jackson, Miss.....	2	United Furniture Company, Lexington, N. C.....	1
Northern Electric Company, Montreal, Que., Canada..	1	U. S. Navy, Indian Head, Md.....	1
Northern Furniture Company, Sheboygan, Wis.....	1	Widdicomb Furniture Co., Grand Rapids, Mich.....	1
Northwest Chair Company, Tacoma, Wash.....	1	Winchester Repeating Arms Co., New Haven, Conn.....	2