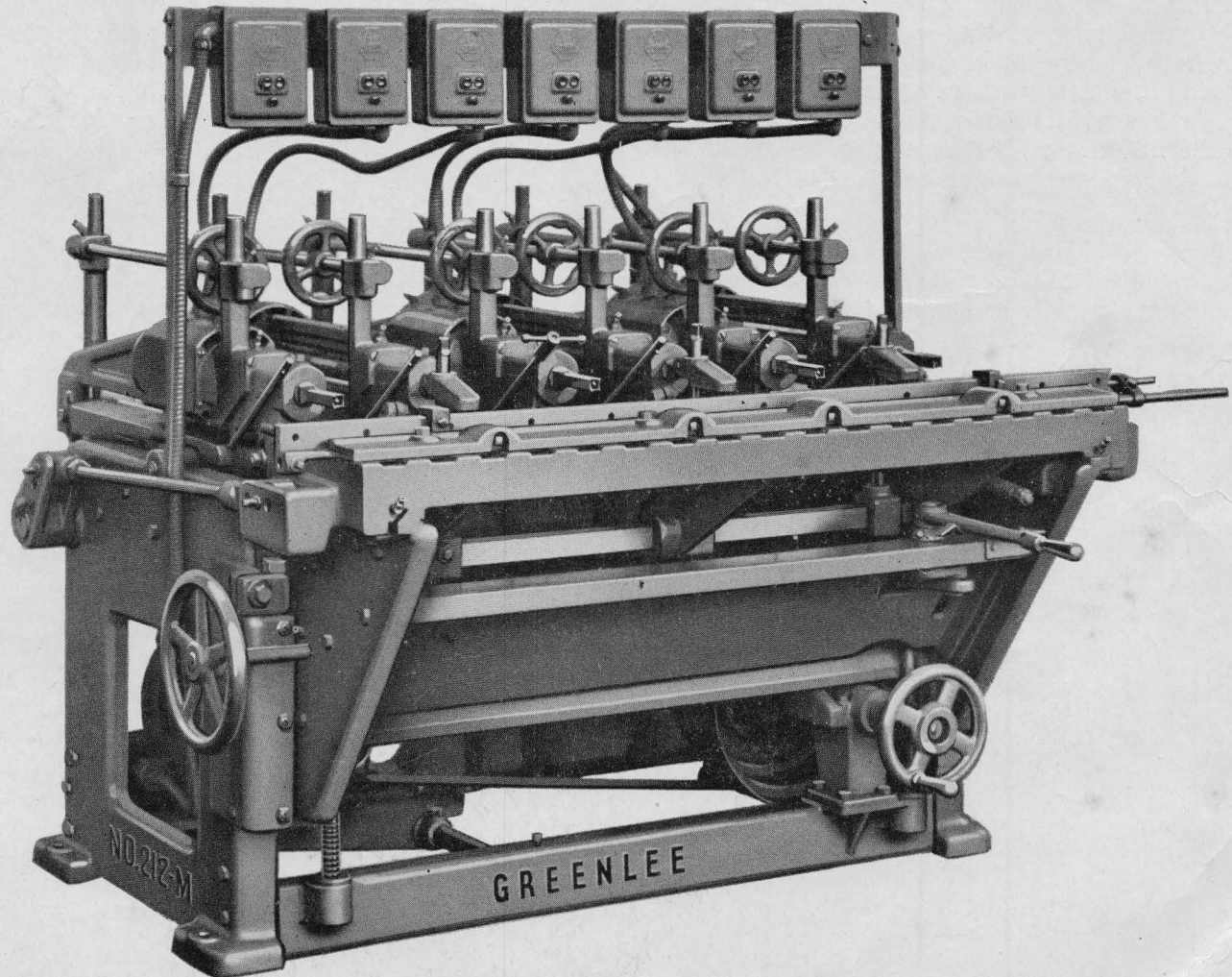


# Greenlee

**No. 212-M ELECTRIC MULTIPLE-SPINDLE MORTISER**



**Greenlee**  
BROS. & CO.   
ROCKFORD, ILLINOIS, U.S.A.

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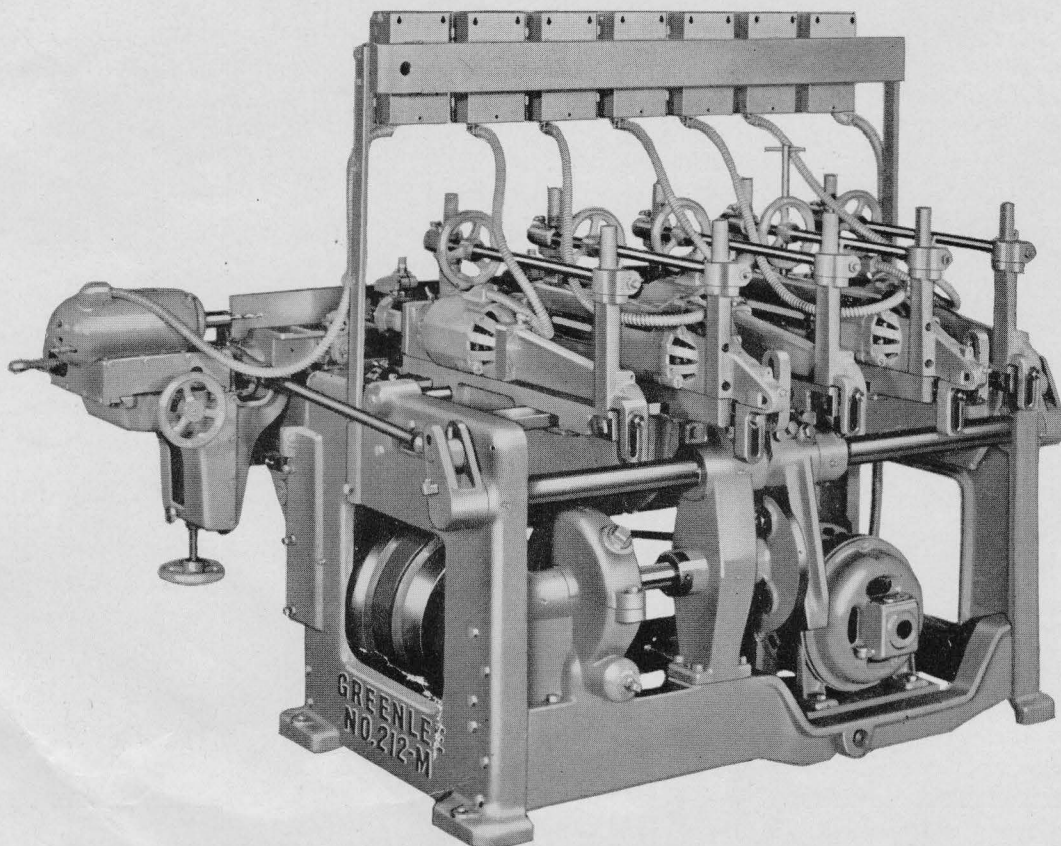
## No. 212 ELECTRIC MULTIPLE-SPINDLE MORTISER

EVERY progressive manufacturer of wood products is deeply interested in the lowering of production costs. One of the most effective ways of doing this in many plants is by employing multiple-spindle machines for mortising work. It is the logical way of making parts in quantity where several mortises are to be made within a reasonable distance of each other. Not only does it increase production, but it provides for greater accuracy in machining.

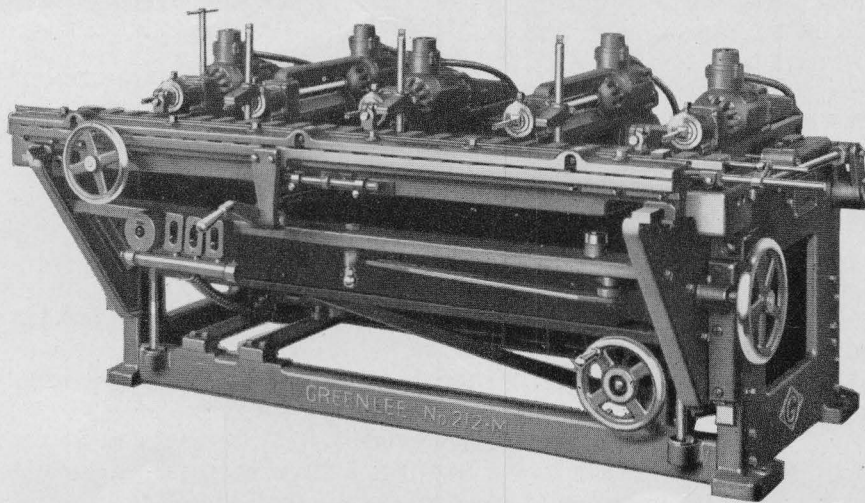
The advantages of gang mortising are readily apparent when it is considered that, as a rule, all mortises in a part can be made at one handling and usually at one mortising stroke. The increase in production is enormous. In figuring

the time that can be saved by the installation of one of these machines, it is not enough to take into consideration only the saving in the mortising operation itself, even if that does amount to several hundred per cent. An important saving that must not be overlooked is the one resulting from the accurate duplication of parts, which reduces the time required for making the assembly.

The first Greenlee Multiple-Spindle Mortiser was built more than forty years ago, but at that time there was small demand for such machine, except in special cases. Today, hundreds of woodworkers are using these Greenlee machines in the manufacture of furniture, sash, French



Rear View of No. 212-M Electric Multiple-Spindle Mortiser with End-Boring Attachment; also showing the feed mechanism and its motor. A front view without the boring attachment is shown on the preceding page.



A 72-inch No. 212-M with Compound Table. Now regularly built with starters mounted above; also with handwheel vertical adjustment for the mortising heads and improved rack-and-pinion lengthwise adjustment, as shown in the preceding illustrations.

doors, implement frames and many other products where two or more mortises are made in the same face of a part and within a reasonable distance of each other.

The use of hollow chisels makes multiple work practical. They alone can produce square or oblong mortises, form recesses and cut open slots or gains. No lay-out is necessary, and yet the machine works absolutely accurate in size and spacing. This means time saving in mortising and in assembling, owing to the perfect duplication of parts.

The mortiser described in this bulletin is built in 50 and 72-inch lengths, although the 50-inch machine is more frequently supplied, as that range is generally sufficient for usual needs.

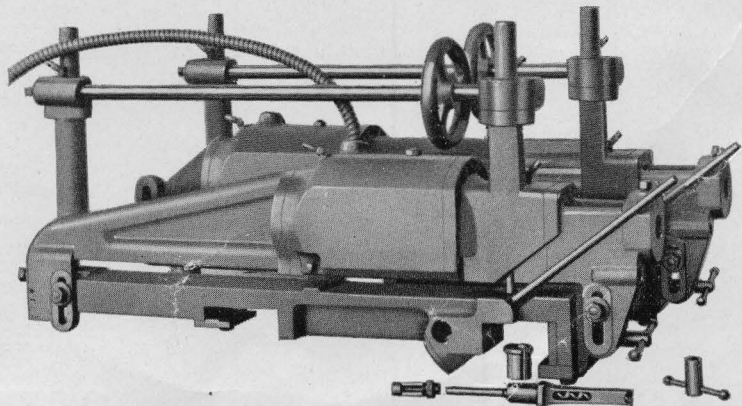
#### **End-Boring Attachment**

An automatic end-boring attachment for boring caster holes in table legs, while they are being mortised, can be added. This unit is regularly mounted on the right-hand end of the table, as illustrated on the opposite page, and consists of a carriage carrying a  $\frac{3}{4}$ -H.P., 3600 R.P.M., built-in spindle motor with connected automatic feed, having stroke adjustable up to 4-inch length for boring to a maximum depth of  $3\frac{1}{2}$  inches.

**Frame** The frames of these machines are powerfully built to withstand the strains of mortising and to operate at high speed without vibration. They consist of two heavy end castings tied together by a large single-piece bed casting, having ways that support the mortising heads. Additional channel-type girts carry the feeding mechanism. The joints between the girts and end frames are scraped and doweled to insure perfect alignment. The mortising-head bed is an unusually heavy casting with large rectangular ways and heavy

cross ribbing to prevent distortion under heavy loads. The channel-shaped ways which guide the table knees are adequately proportioned to properly support the table and are a part of the end frames. Adjustable gibs are provided for take-up in two directions. The ways have a heavy toe-clamp at the upper end for locking the knees rigidly against the frame. These knees are supported on cross-connected screws having self-aligning bronze nuts. Knees are connected by heavy L-shaped girts.

**Tables** The table regularly furnished is the plain type without endwise movement. When long mortises are to be made, however,



Two 2-H. P. Mortising Heads, showing the attached adjusting shafts extending diagonally to the front for quickly and easily locating the heads lengthwise of the machine and to within 4-inch chisel centers of heads on either side. The handwheel vertical adjustment for staggered mortises is also shown.

a compound table can be substituted, which has 6-inch endwise movement by a convenient hand-wheel. Both types are of cast-iron and are heavily ribbed and well proportioned. They are securely gibbed to the table knees and have a V-way at one end for perfect guidance during the mortising stroke. Front and end stops are provided, also an adjustable back fence.

An automatic clamp is regularly furnished with the plain table, but can be omitted when not required. It grips the stock during the mortising stroke and until the chisels are withdrawn, but releases the stock in time for it to be replaced or to be moved endwise when making long mortises. A hand clamp is regular equipment on the compound table, since the stock should remain clamped in making long mortises, but the power clamp can also be included for use on other work.

**Feed** The power-feed mechanism is driven from a motor within the frame, and a variable-speed drive provides any desired feeding rate between 7 and 21 strokes per minute. Any other three-to-one ratio can be provided, if desired. The feed operates through a disc clutch, a worm gear drive, a crank disc, a pitman mounted on a heavy rocker shaft, and a connecting link to each end of the table. This construction insures an even table movement and mortises of accurate depth. Three lengths of table strokes are provided and there are three stroke positions to permit working various widths of stock at the front edge of the table. The control is by a convenient hand lever just beneath the table, which operates the multiple disc clutch

and provides for instant starting and stopping of the feed.

### Mortising Heads

Mortising heads have rack-and-pinion adjustment along the rail, to which they are gibbed, and a pinion with front shaft extension forms an integral part of each unit for quick, convenient adjustment by means of a detachable-handle wrench. Each head has endwise adjustment for equalizing chisel lengths or to make mortises of different depths; also vertical adjustment by individual handwheel, operating through connected screws at each end of the carriage, which definitely insures correct horizontal alignment. The bit spindles run in ball bearings and carry the rotors of the built-in motors. Adjustable thrust bit bushings are furnished, and the chisel socket is a part of the spindle housing to maintain perfect alignment of the mortising tools at all times.

### Motors and Control

Built-in, totally-enclosed, dust-proof motors are regularly furnished for 220 or 440 volt, 2 or 3 phase, 60 cycle current, and the size can be varied to suit special conditions. 2-H.P. is standard for furniture or similar work with chisels 1" or smaller, but 4-H.P. motors are available for handling chisels up to 1 1/4" or 1 1/2" square. Push button start and stop stations provide convenient control for each motor, so that any head can stand idle when not required. A master push button station is provided for stopping all motors at once. The starters have relays for overload and under-voltage protection, eliminating all fuses, and all wiring is in conduit.

## Specifications

|                                                                 |                     |
|-----------------------------------------------------------------|---------------------|
| Chisel Capacity — Standard-range machine with 2-H.P. motors     | 1"                  |
| (3/8" or 7/8" is the maximum in extremely hard wood)            |                     |
| Maximum chisel centers                                          | 50" and 72"         |
| Minimum chisel centers (2-H.P. motors)                          | 4"                  |
| Minimum chisel centers (4-H.P. motors)                          | 5"                  |
| Maximum width of stock                                          | 8"                  |
| Table strokes per minute—Variable drive regularly provides from | 7 to 21             |
| Length of table stroke                                          | 4", 5" and 6"       |
| Lengthwise travel of compound table                             | 6"                  |
| Endwise adjustment of spindle heads                             | 1 1/2"              |
| Transverse adjustment of end-boring attachment                  | 4"                  |
| Vertical adjustment of spindle heads                            | 2 1/2"              |
| Vertical adjustment of end-boring attachment                    | 3"                  |
| Standard spindle motors — Totally enclosed                      | 2-H.P., 3600 R.P.M. |
| Special-Range spindle motors — Semi-enclosed                    | 4-H.P., 3600 R.P.M. |

|                                                    |                       |
|----------------------------------------------------|-----------------------|
| End-Boring attachment motor — Totally enclosed     | 3/4-H.P., 3600 R.P.M. |
| Net weight in pounds of 50-inch, 5-head machine    | 5200                  |
| Weight boxed for export of 50-inch, 5-head machine | 6000                  |
| Measure in cu. ft. boxed for export                | 185                   |
| Additional weight for 72-inch machine              | 1000                  |
| Floor space of 50-inch machine                     | 5'-8" x 5'-3"         |
| Floor space of 72-inch machine                     | 7'-6" x 5'-3"         |
| Codes: 3-head 50" machine                          | CEHEM                 |
| 4-head 50" machine                                 | CEHIN                 |
| 5-head 50" machine                                 | CEHAL                 |
| 6-head 50" machine                                 | CEHOP                 |
| Add for special-range, 4-H.P. heads                | CEHYS                 |
| Add for 72-inch range                              | CEJAM                 |
| Compound table for 50-inch machine                 | CEJIP                 |
| Compound table for 72-inch machine                 | CEJOR                 |
| End-Boring attachment                              | CEKOS                 |
| Automatic Power clamp, 50-inch machine             | CEKAN                 |
| Automatic Power clamp, 72-inch machine             | CEKEP                 |

GREENLEE BROS. & CO., ROCKFORD, ILLINOIS, U. S. A.

*Machinery for Planing, Shaping, Mortising, Tenoning, Boring and Sawing  
Tools for Mortising, Boring and Routing*