GREENLEE

WOODWORKING MACHINERY

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

GREENLEE WOODWORKING MACHINERY

GENERAL CATALOG

POCKET EDITION

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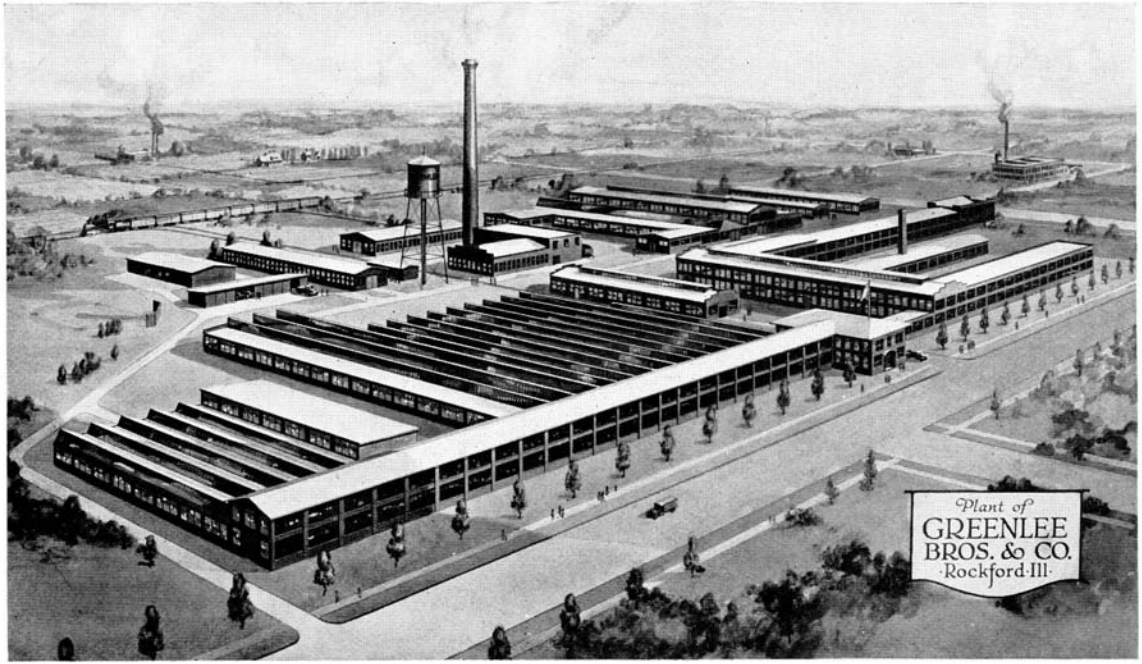
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GREENLEE
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INTRODUCTION

THE purpose of this Pocket Edition of our General Catalog is to present our standard line of Woodworking Machinery in a compact form for ready reference. Special types and arrangements have been omitted, and in no case has it been possible to give more than a general idea of the various points in design and construction which contribute to the success of Greenlee machines.

Standard Railway Car Shop machines are shown in this catalog, but little description of them is attempted. More complete details are given in our large sectional catalog which will be sent to those interested in such machines. Separate catalogs on our Railway Tie Adzing and Boring machines and on our Mine Timber Framers are also available.

Our Hollow Mortising Chisels and Bits, Machine Bits and Woodworkers' Hand Tools are fully covered in special catalogs, although we illustrate some standard types on the last pages of this book. These are preceded by some illustrations and description of our Vises for Woodworkers.

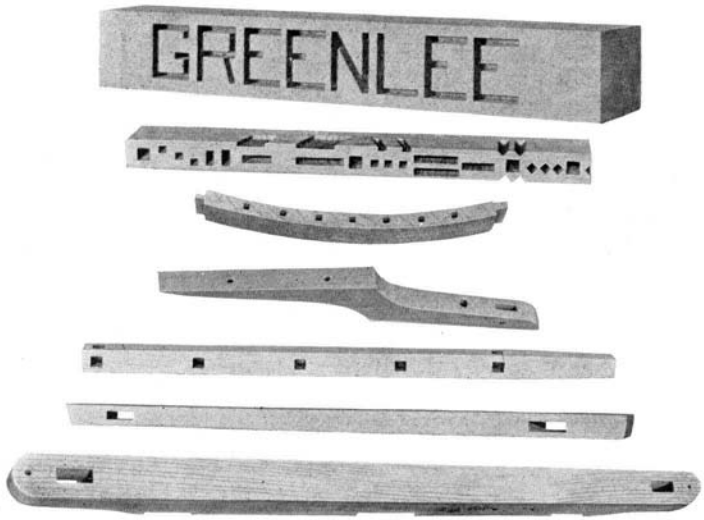
From the above it will be seen that this catalog is merely an attempt to present our standard patterns of general purpose woodworking machines in a concise way. If interested in any particular machines, write us for more complete information. If seeking some machine not illustrated, we also desire your inquiry, as we can often furnish information that will be of assistance.

A Heavy Greenlee Mortiser in Action

Hollow Chisel Mortisers

THE Hollow Chisel type of Mortiser has been as important a factor in the advancement of production in the woodworking industry as have high speed tools in the working of metal. This type of machine was introduced by us nearly fifty years ago and the line shown throughout the following twenty-six pages is the present day development of the first mortiser which was then known as the machine that "bores square holes."

Mortising by machine is the outgrowth of mortising and tenoning by hand. It consists of cutting a square or oblong hole in wood



Some Examples of Mortising Work

at one or more strokes. The old style chopping mortiser requires the boring of a hole and also the cleaning out of the chips by hand after the chopping operation is performed. The Hollow Chisel Mortiser eliminates these two operations and makes a smooth clean mortise without the least jar or pound.

This mortiser uses a square chisel with a hole through it. A special form of boring bit is encased within the chisel and both are held in a fixed relation to each other. The bit cuts slightly in advance of the chisel, boring a round hole whose diameter is equal to the chisel size. The edges of the chisel cut the corners perfectly square and clean and all chips are carried away by the bit. Partial cuts may be taken on the edge of stock and oblong, oval or other shapes of chisels used for special work.

There are very few plants where wood is assembled into a finished product that do not have mortising operations to perform. The kind of work and expected production determine the most suitable size and pattern of machine. Our experience in building both machines and their tools is at your disposal.

No. 225 Foot Feed Vertical Hollow Chisel Mortiser

Also built with Compound Table similar to that of No. 226 shown on Page 8.

No. 225 Foot Feed Vertical Hollow Chisel Mortiser

ANY woodworking shop having a moderate amount of light mortising to do, will find this machine most useful and economical. While suitable only for small chisels, the size of mortise is limited only in depth, as any length or width is possible by successive strokes of the chisel.

The General Design is along the same lines as the No. 227 Power Feed Mortiser. The tools feed to the work with quick return, the table is supported directly under the chisel, and full provision has been made for assuming the thrust.

The Frame is a strong one piece casting with the interior cored out to provide space for the carriage lever and connections to the foot treadle. The large opening at the back allows easy access to adjust the coil spring which returns the chisel carriage.

The Chisel and Bit Carriage reciprocates in planed ways on the face of the frame. The stop rod controls its movement and regulates the depth of mortise, also providing spring cushion on the return stroke. The pulley and spindle are completely enclosed.

The Table can be either a plain or compound tilting type. The latter has a work clamp and both are arranged to receive a lay-out stop rod which will be furnished at extra cost. The compound table has rack and pinion lengthwise movement in addition to the vertical and cross adjustment of the plain table.

The Spindle is driven by a belt from the countershaft over idle pulleys with adjustment to take up the stretch. When desired, we can furnish a wire mesh guard to completely enclose this belt.

The Range is for chisels from ¼ to ⅝-inch square and a 4-inch maximum stroke. Chisels of 4 or 2¾-inch blade may be used. The maximum distance from chuck to table is 17 inches.

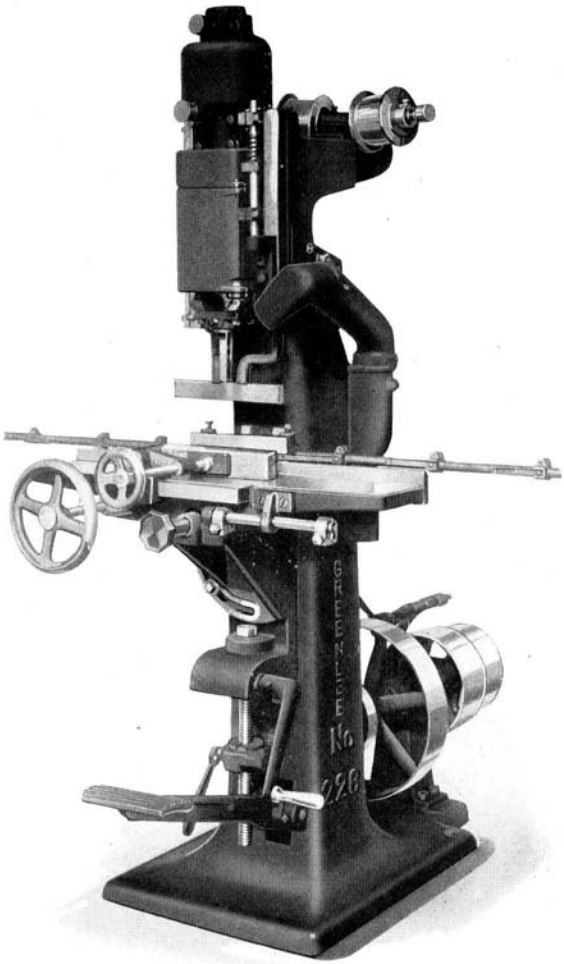
When Belt Driven, the rear base countershaft has 10x4¼-inch tight and loose pulleys running 1150 R. P. M. An attached insulating bracket and special pulley may be substituted for drive by a 2 H. P., 1800 R. P. M. motor.

The Equipment includes one ⅜x4-inch hollow chisel with bit, set of chisel bushings, adjustable thrust bit bushings, wrenches and the specified arrangement of drive.

No.	Style of Table	Floor Space	Wt. in Lbs.	Code
225	Plain	3′ x 4′ 6″	1150	MEADER
225-B	Compound	3′ x 4′ 6″	1200	MEADOUT

Belt Guard of wire mesh, extra

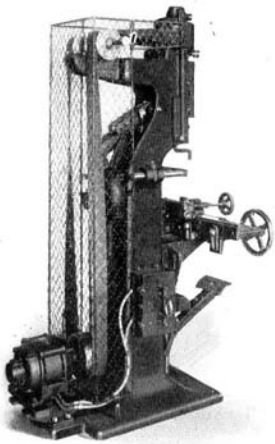
On page 12 we illustrate a machine of the same range, but with a built-in motor on the bit spindle.



No. 226 Foot Feed Vertical Hollow Chisel Mortiser

No. 226 Foot Feed Vertical Hollow Chisel Mortiser

THIS Foot Feed Mortiser differs from our No. 225 in being somewhat heavier and more complete in its mechanical details. It is popular in shops doing a limited amount of mortising on sash, cabinet or other miscellaneous work, and is an ideal type for manual training purposes due to its safety features and ease of operation.



No. 226 with Belt Guard and Motor

The Table is of the compound type with tilting adjustment to 45 degrees either way. It is 36 inches long, has 8-inch lengthwise movement, cross adjustment for centering 6-inch wide stock, and vertical adjustment of 10 inches. A work clamp is provided and the adjustable back fence is fitted with a lay-out stop rod.

The Built-in Fan Blower is important since it keeps the surface of the work free from chips and serves to cool the mortising tools. It is also a safety feature since it eliminates the necessity of brushing away the chips by hand.

The Range is for chisels from ¼ to ¾-inch square, although ⅝-inch chisels are as large as can be efficiently used on average work. The maximum chisel stroke is 4 inches and 12-inch high stock can be handled.

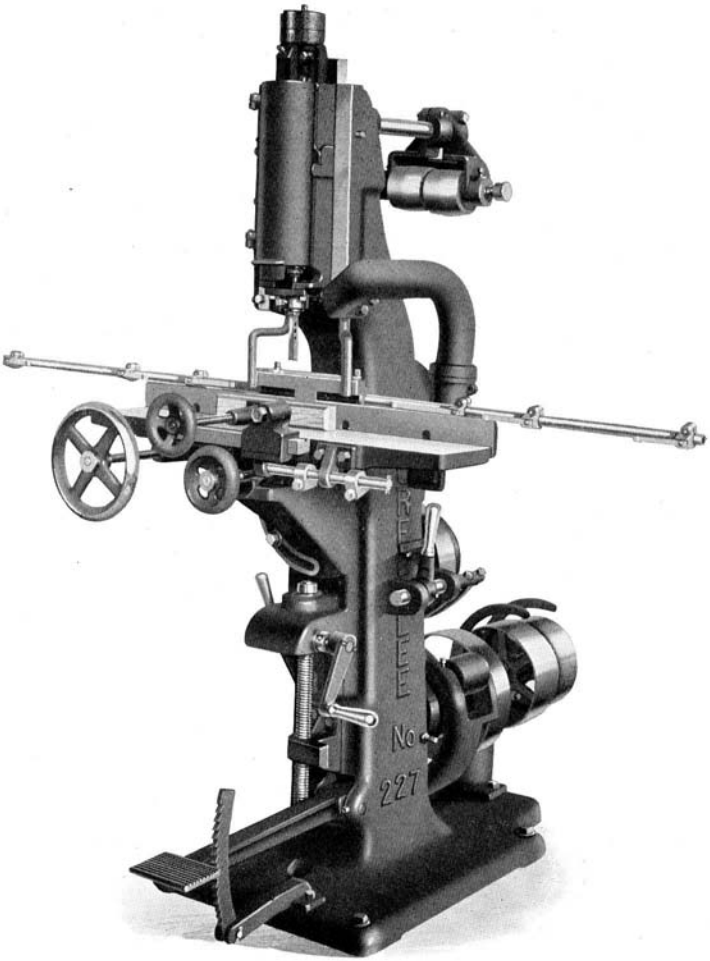
The Countershaft is mounted on the machine base and has 10x4¼-inch tight and loose pulleys to run 850 R. P. M.

When Motor Driven, the countershaft is omitted and an attached insulating bracket and special pulley substituted. A 2-H.P. motor of any speed up to 1800 R. P. M. is suitable.

The Equipment regularly includes one each ⅜ and ½-inch square chisels with bits, chisel bushings, adjustable thrust bit bushings, wrenches, the countershaft, belt shifter, and a 6-foot lay-out rod with six adjustable stops.

No.	Style of Table	Floor Space	Wt. in Lbs.	Code
226	Compound	3′ 6″ x 4′ 6″	1350	MELLOWING

Belt Guard of wire mesh, extra



No. 227-B Power Feed Vertical Hollow Chisel Mortiser

Also built with a Plain Table similar to that of No. 225 shown on Page 6.

No. 227-B Power Feed Vertical Hollow Chisel Mortiser

THIS Mortiser fully meets the demand for a power feed machine suitable for sash, cabinet, and other light manufacturing work. It is complete in all the features necessary for the successful operation of hollow chisels under widely varying conditions.

The Frame is a one piece casting fully enclosing the power feed mechanism with the exception of the drive pulley. The built-in fan blower is an important feature since the air blast serves to cool the tools and, by keeping the surface of the work free from chips, eliminates the need of brushing them away by hand.

The Power Feed has three speeds of 18, 26 and 36 strokes per minute by means of cone pulleys and a feed belt shifter. It is controlled by the foot lever and is brought into action by a belt tightener which, when released, brings a brake into action on the rim of the drive pulley.

The No. 227-B Machine has a Compound Table fitted with a screw clamp and has rack and pinion lengthwise travel gauged by adjustable stops. This table arrangement is generally recommended. The No. 227 type has a Plain Table without these features and is furnished only when the work does not require clamping.

Both Tables are 6½x36-inch size, have vertical and angular adjustment and transverse movement to center 6-inch stock. A 6-foot long stop rod with lay-out stops is fitted to the adjustable back fence which has a lip hold-down. Two additional stock hold-downs are also carried from the frame.

The Range is for chisels from ¼ to ¾-inch square, and a 4-inch maximum stroke. Chisels of 4 or 2¾-inch blade length may be used. The maximum distance from chuck to table is 17 inches and the table adjustment is 10 inches.

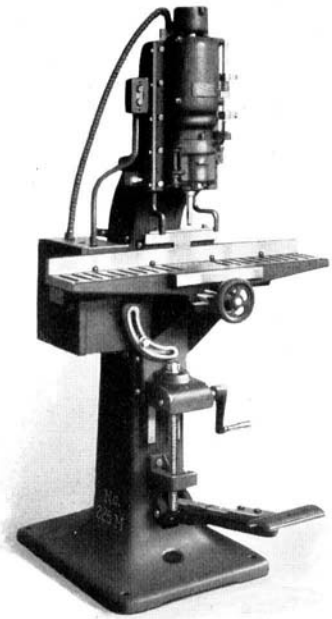
The Countershaft has 10x4¼-inch tight and loose pulleys to run 1150 R. P. M., or a 3 H. P. motor carried on an attached bracket may be coupled to this shaft to drive the complete machine.

The Equipment includes one ½x4-inch hollow chisel with bit, chisel bushings, adjustable thrust bit bushings, stops, wrenches and the arrangement of drive specified.

No.	Style of Table	Floor Space	Wt. in Lbs.	Code
227-B	Compound	3′ 8″ x 5′ 6″	1400	MELTON
227	Plain	3′ 8″ x 5′ 6″	1350	MELTING

Belt Guard of wire mesh, extra

On page 13 we illustrate a machine of the same general design, but with a built-in motor on the bit spindle and a separate motor at the base for the drive of the feed.

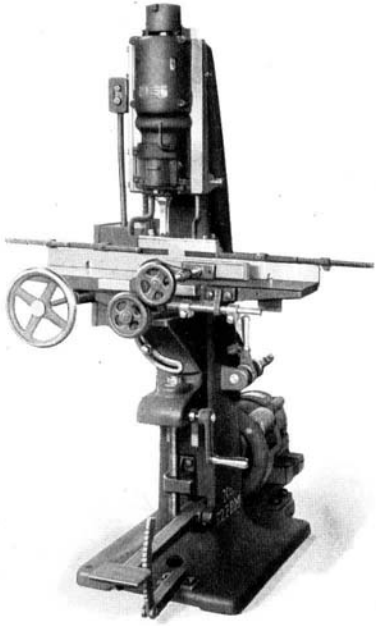


No. 225-M Foot Feed Mortiser with Built-in Motor

THE Mortiser shown above differs from the No. 225 Belt Driven Machine described on page 7, in having a 1½ H. P., 3600 R. P. M. ball bearing motor built in the chisel carriage for the drive of the bit spindle. It also has a blower within the carriage for chip removal and motor ventilation. In all other respects these machines are similar and reference should be made to page 7 for information on the foot-feed mechanism, range, adjustments and equipment. The motor is furnished complete with conduit wiring and enclosed starting apparatus having push button control.

The Superiority of this design lies in the fact that all belts and pulleys are eliminated, thus permitting full power to be transmitted to the bit spindle It is easy to operate, exceptionally quiet running, and the maintenance cost is lowered to a minimum.

No.	Style of Table	Floor Space	Code
225-M	Plain	3′ x 3′ 2″	MEATUS
225-BM	Compound	3′ x 3′ 2″	MECCA

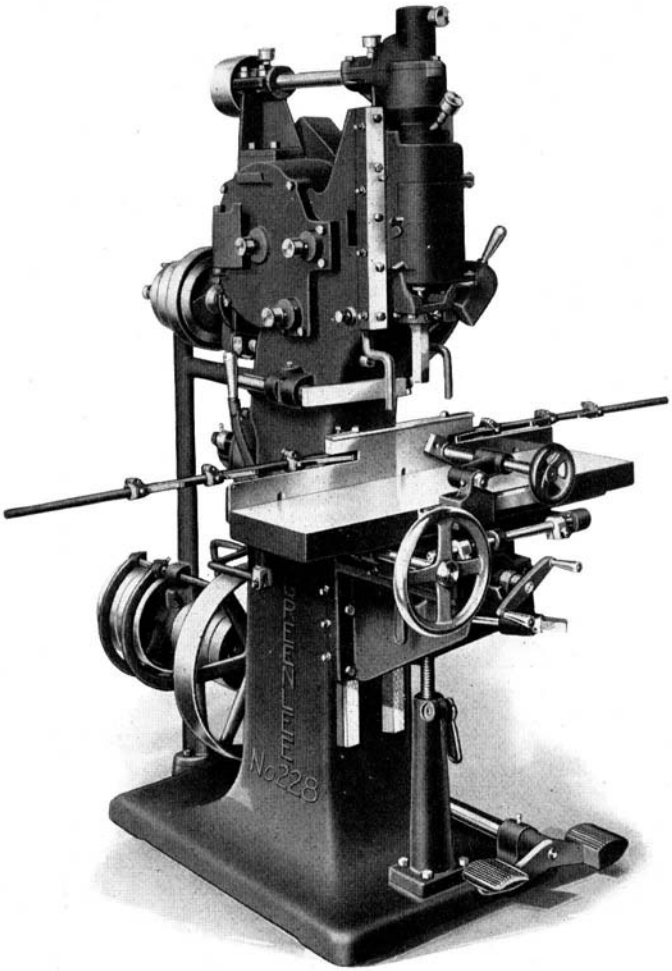


No. 227-BM Power Feed Mortiser with Built-in Motor

THIS Mortiser has a ball bearing motor built in the chisel carriage for the drive of the spindle, and a separate motor mounted on the base for the drive of the feed. It has a built-in blower for chip removal and motor ventilation, which also serves to cool the tools. The range is for chisels up to 1" square. In other respects it is similar to the No. 227-B described on page 11, and reference can be made to this for information on the power feed, adjustments, equipment, and the two types of tables.

The Built-in Motor is mounted on the bit spindle, thus eliminating the pulleys and belts for the spindle drive, and lowering the power consumption and maintenance cost to a minimum. It is easy to operate and very quiet running. Conduit wiring is used throughout with enclosed starting apparatus having push button control.

No.	Style of Table	Floor Space	Code
227-BM	Compound	3′ x 4′ 8″	MEDLAR
227-M	Plain	3′ x 4′ 8″	MEDIA



No. 228 Power Feed Vertical Hollow Chisel Mortiser

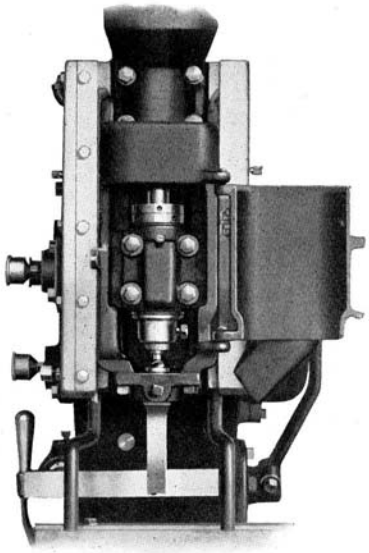
No. 228 Power Feed Vertical Hollow Chisel Mortiser

THE application of this mortiser is exceptionally broad, due to its wide range of adjustments, perfect feed control and convenient operating features. It has an enviable record in the automobile body industry and is used extensively in the manufacture of sash and doors, carriages, implements and furniture.

The General Design embodies a stocky one piece frame which entirely encloses the feeding mechanism and provides a built-in fan blower for chip removal and cooling the tools. The main belt drives the shaft at the top of the machine and power is transmitted to the bit spindle through heat treated bevel gears running in oil. The feed belt is on four-step cone pulleys.

The Feed is by a geared pitman of great power, yet perfectly controlled by either the hand lever or the double foot treadle which operate an expansion clutch within the feed cone.

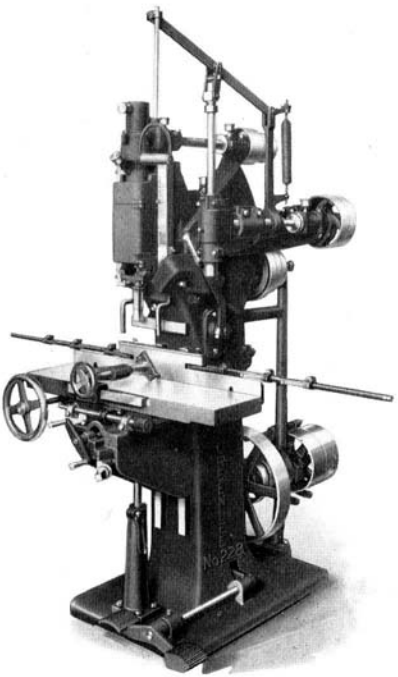
The Chisel Carriage is extra long and reciprocates in gibbed ways. Its stroke is adjustable from 2½ to 5 inches with four rates of feed varying from 16 to 40 strokes per minute with quick return. Adjustable thrust bit bushings aid in proper tool setting and minimize tool breakage. The revolving parts are guarded by a hinged cover which permits easy access to the spindle for setting the bit in correct relation to the chisel.



No. 228 Chisel Carriage

The Compound Table has vertical adjustment of 12 inches, lengthwise movement of 12 inches by rack and pinion, and cross adjustment of 5 inches by a quick acting screw. Lay-out stops are provided to gauge its movement for duplicate work. When clamped in position, the work is not moved until the mortise is completed as the compound adjustments permit bringing it to the correct position under the chisel.

No. 228 Mortiser—Continued



No. 228 with Boring Attachment

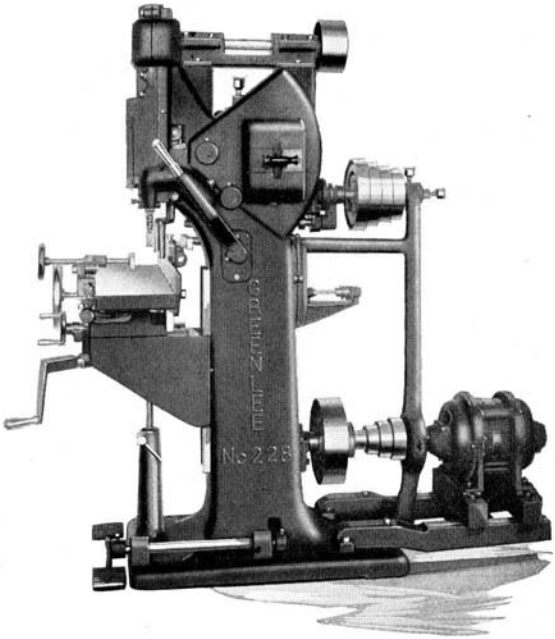
The Universal Table has tilting adjustment to 30 degrees in addition to the adjustments and equipment of the compound type. It is intended for use in shops where the product regularly requires the making of mortises on an angle.

Both Tables are 9½x 36-inch size. The back fence is adjustable for height, is fitted with a lip hold-down and carries the 6-foot stop rod with its adjustable lay-out stops. An auxiliary back fence, carried from the frame, is provided for extremely high work. The table extension at the front is fitted with a screw clamp for holding the work and adjustable prong hold-downs are also carried from the machine frame.

A Boring Attachment with angular adjustment to 35 degrees in either direction and cross adjustment of 5½ inches can be applied to the right side of the machine. It will operate bits as large as 1½ inches in diameter and bore through 8-inch material. This attachment is usually applied for handling the ordinary boring work which is often required on stock being mortised.

The Range is for chisels from ¼ to 1¼-inch square and 5-inch maximum stroke. The compound table will take 15-inch high and the other pattern 12-inch high material, while both adjust to center 8-inch stock under the chisel.

The Countershaft is securely mounted on the base of the frame so that the machine is entirely self contained. It is fitted with 10x4¼-inch tight and loose pulleys to run 850 R. P. M.



No. 228 with Attached Motor Bracket

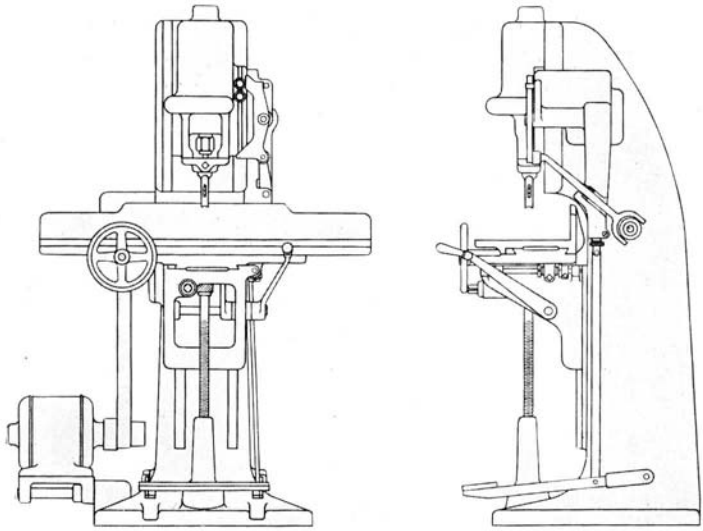
Motor Drive is regularly by a 5 H. P. motor running 1200 R. P. M. or less, mounted on an attached insulating bracket and connected to the base drive shaft by a sleeve coupling as shown above. This provides a compact and self-contained unit with three short open belts for driving the horizontal shaft at the top, the variable feed, and the fan blower.

The Equipment includes one each 5/16x2¾-inch, ⅜ and ½x4-inch, ⅝ and ¾x5-inch hollow chisels and bits, chisel bushings, adjustable thrust bit bushings and set of wrenches.

No.	Style of Table	Floor Space	Wt. in Lbs.	Code
228	Compound	4′ x 6′	2200	MELODION
228-C	Universal	4′ x 6′	2225	MELODIST
Boring Attachment, extra			175	ODAD

Motor bracket and sleeve connection, extra

Belt Guard of wire mesh, extra



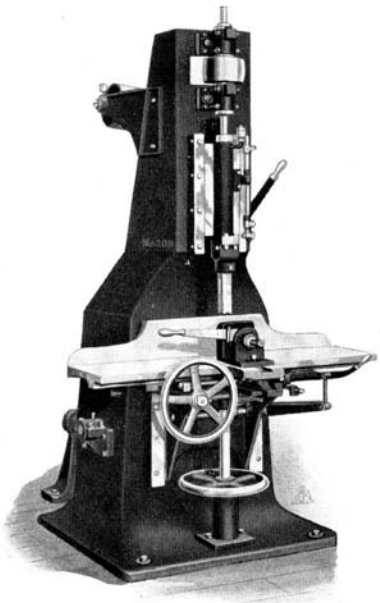
No. 229 Power Feed Mortiser with Built-in Motor

THIS Mortiser is our latest design for fast and accurate work on automobile bodies, furniture, implements, etc. It embodies a built-in 5-H. P. motor on the chisel carriage with a blower for chip removal and motor ventilation, a completely enclosed self-oiling feeding mechanism fitted with all ball or roller bearings and driven by a 3-H. P. motor, three feeding speeds, and all the necessary equipments and adjustments for handling a wide variety of work.

The Mortising Stroke is adjustable up to 8 inches with continuous feed while the foot treadle is held down, but, upon its release, returns from any point in its stroke to the top position, past the regulating stops, to give full clearance for the work.

The Range is for chisels up to 1½ inches square, clamping stock 10 inches wide and mortising 18-inch high material. The table has vertical adjustment of 14 inches, cross movement of 6 inches by a quick acting lever, and lengthwise travel of 12 inches by hand wheel. Adjustable stops are provided for duplicate work. A universal table can be furnished with tilting adjustment.

No.	Table	Floor Space	Wt. in Lbs.	Code
229	Compound	4′ 5″ x 3′	3000	MELANO
229-C	Universal	4′ 5″ x 3′	3050	MELANOID



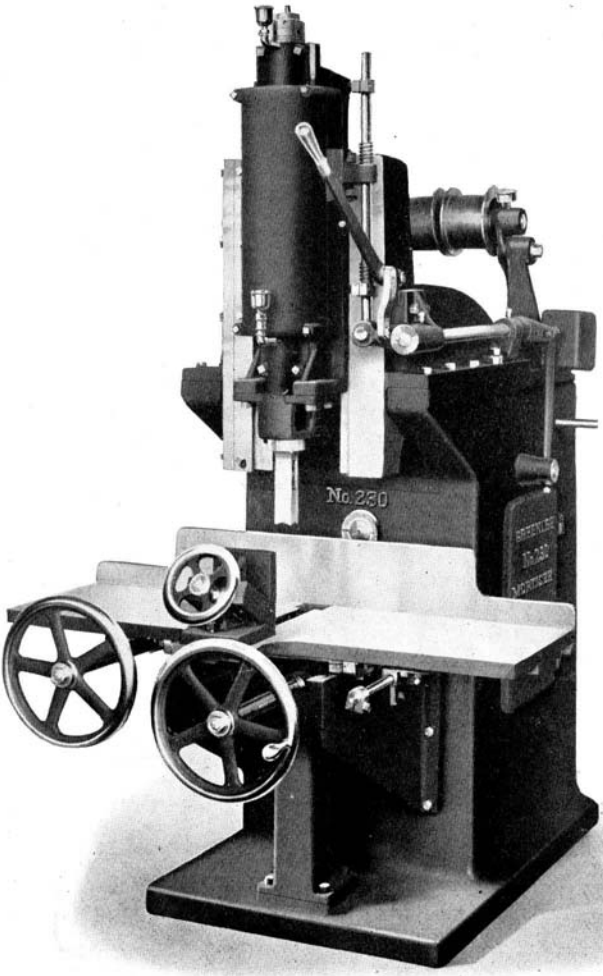
Nos. 209 and 210 Vertical Hollow Chisel Mortisers

OUR No. 209 Mortiser was designed for wagon or implement shops, but is adapted to various classes of work requiring its range. Motor drive is had by substituting a flexible coupling for the tight and loose pulleys of the attached base countershaft. The No. 210 machine differs only in having an overhead countershaft for two speeds of feed. One or two boring attachments can be added.

The Mortising Stroke is adjustable up to 7 inches and is controlled by automatic stops and a hand lever for starting, stopping or reversing from any point. The feeding mechanism consists of large slow-running frictions and gears enclosed within the frame.

The Range is for 1½-inch square chisels and for material 12 inches wide and 15 inches high. The compound table has cross adjustment of 8 inches and lengthwise travel of 12 inches.

No.	Drive	Floor Space	Wt. in Lbs.	Code
209	Attached C. S.	4′ x 6′	3350	MELODY
210	Separate C. S.	4′ x 4′ 9″	3700	MENACE



No. 230 Vertical Hollow Chisel Mortiser

Also built with one or two Universal Boring Attachments.

No. 230 Vertical Hollow Chisel Mortiser

THIS Mortiser fully meets the demand for a medium heavy vertical machine for use in furniture, wagon, implement, and automobile body factories as well as in the smaller car shops. The design is similar in general details to that of our large vertical car mortisers.

The Chisel Ram reciprocates under control of automatic stops and can also be started, stopped, or reversed at any point in its stroke by means of the hand lever. It carries the bit spindle in long self-oiling bearings provided with ball thrust bearings.

The Feed Mechanism is driven from the countershaft by a two step cone pulley. Internal expansion clutches, driven through a simple chain of spur gears, actuates the feed and reverse. This mechanism is fully enclosed but easily accessible.

The Table has cross adjustment and lengthwise movement gauged by lay-out stops. It is at a fixed height since adjustments can be made by changing the length and location of the chisel stroke. The travel of the ram permits making a short stroke either at the table level or at the top of a 12-inch timber.

Universal Boring Attachments may be added to this mortiser when desired. They have quick adjustment, wide range, and capacity for bits up to 2½-inch diameter.

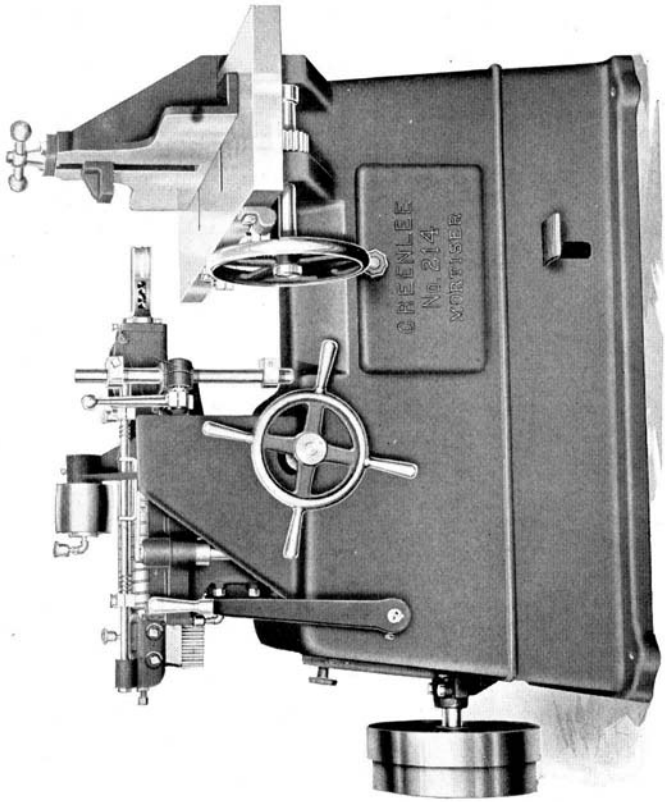
The Range is for chisels up to 1½-inch square, although 1¾-inch chisels can be used under some conditions. The maximum stroke is 13 inches. Timbers 12 inches high can be mortised and the standard table will clamp 14-inch widths.

The Countershaft is regularly overhead and has 12x5½-inch tight and loose pulleys to run 725 R. P. M. Base drive can be arranged when desired.

When Motor Driven, the motor may couple to the overhead countershaft, or it can be direct connected to an attached auxiliary base shaft provided to obtain the two speeds of feed. A 7½-H. P. motor of any speed from 700 to 900 R. P. M. is suitable.

The Equipment includes one each ½, ⅝, ¾, 1 and 1¼ by 6½-inch blade hollow chisels with bits, set of tool holders, stops and wrenches. With boring attachments a set of machine bits in five sizes from ½ to 1-inch is added, also safety bit guards.

No.	Style	Floor Space	Wt. in Lbs.	Code
230	No Bor. Attachments	5′ 8″ x 4′	4300	MEMBRAL
230-B	1 Bor. Attachment	5′ 8″ x 4′ 5″	4900	MEMORIA
230-C	2 Bor. Attachments	5′ 8″ x 4′ 10″	5500	MEMPHITE



No. 214 Horizontal Hollow Chisel Mortiser

No. 214 Horizontal Hollow Chisel Mortiser

THIS Horizontal Mortiser is often preferred to the vertical type for the medium heavy work in furniture, wagon, implement and automobile body factories, as well as in the smaller car shops. It has the same range as our No. 230 vertical machine and is particularly convenient because of the easy vertical adjustment of the chisel ram and because the chips fall from the face of the stock leaving lay-out lines clearly visible.

The Frame is a heavy box form which entirely encloses the feeding mechanism. At the rear are gibbed ways upon which the timber table is mounted and adjusted. At the front are ways to carry the vertically adjustable knee piece supporting the reciprocating chisel ram. This is counterbalanced and fitted with a quick adjusting and locking device.

The Timber Table has 14-inch longitudinal movement and is provided with a powerful screw clamp. The heavy back fence has angle adjustment as well as cross adjustment for varying widths of stock. A multiple lay-out stop rod on the edge of the table is controlled by a foot treadle for gauging the length of mortises.

The Feed Mechanism is driven by a cone pulley which provides two speeds of feed. Internal band frictions on a shaft properly geared to the chisel ram produce the reciprocating motion. The frictions are engaged and released by an automatic stop rod on the ram for continuous strokes. A lever is provided, however, for starting, stopping or reversing the ram from any position.

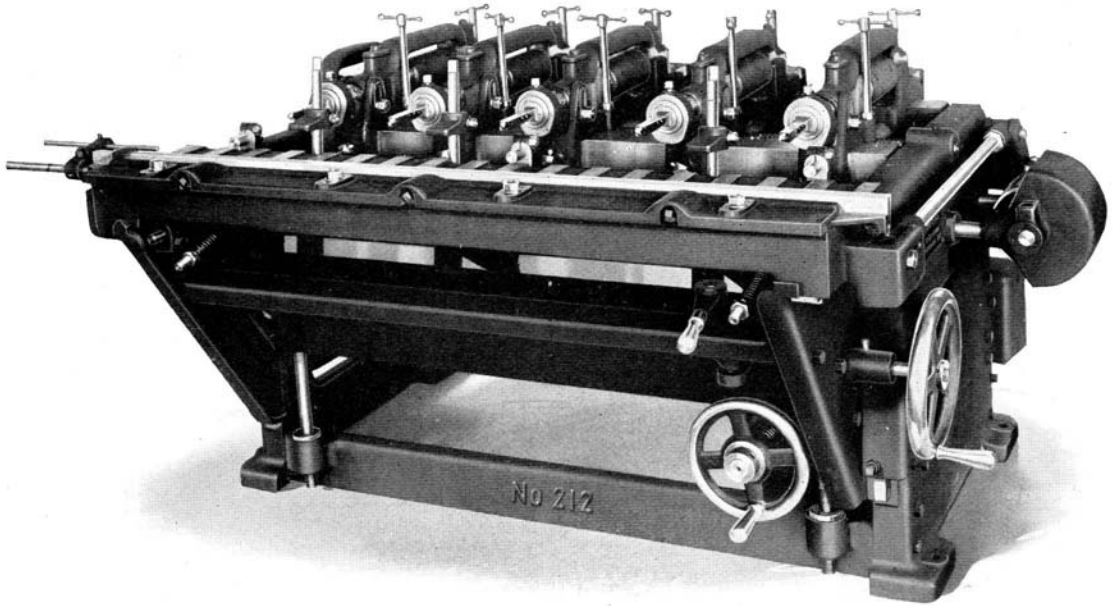
The Range is for chisels from 5/16 to 1½-inch regularly, or 1¾-inch in special cases. The chisel ram has an 8-inch stroke and 8-inch vertical adjustment. The table will clamp stock up to 10 inches high and 8-inch or greater width.

The Countershaft is regularly overhead, but when placed on or beneath the floor, special idlers are added. It has 10x5½-inch tight and loose pulleys to run 725 R. P. M. The belting required is an endless spindle belt and one for the feed cones.

When Motor Driven, a short floor shaft with a coupling is furnished in place of the regular countershaft for direct connection to a 7½ H. P. motor of any speed from 700 to 1200 R. P. M.

The Equipment includes one each ½, ⅝, ¾, 1 and 1¼x6½-inch blade hollow chisels and bits, set of chisel and bit bushings, wrenches, and the separate countershaft.

No.	Floor Space	Wt. in Lbs.	Code
214	6′ 3″ x 4′ 6″	3600	MAJORCAN



No. 212 Multiple Spindle Hollow Chisel Mortiser

Built with from 3 to 6 spindles.

No. 212 Multiple Spindle Hollow Chisel Mortiser

THIS Multiple Mortiser is an economical machine for any work requiring several mortises within a reasonable distance in the same piece of stock. It has been furnished extensively for various classes of work including the manufacture of sash, furniture, implements, factory trucks, etc.

The Spindles are moved lengthwise by rack and pinion and have vertical adjustment of 1½ inches for staggered mortises. All have endwise adjustment of 2 inches for equalizing chisel lengths or for making mortises of different depths.

The Plain Table is 5 feet long and 13 inches wide. It is fitted with front stripping stops, an end stop for locating the work, and an adjustable back fence which is regularly 2 inches high.

An Automatic Power Clamp is shown in the cut of this machine and is furnished as an extra. It is suitable only for the plain table and operates to grip the work during the mortising stroke and until the table has returned to the initial position.

A Compound Table having 6-inch lengthwise movement can be furnished for making long mortises. A hand lever clamp is then provided for holding the stock in position.

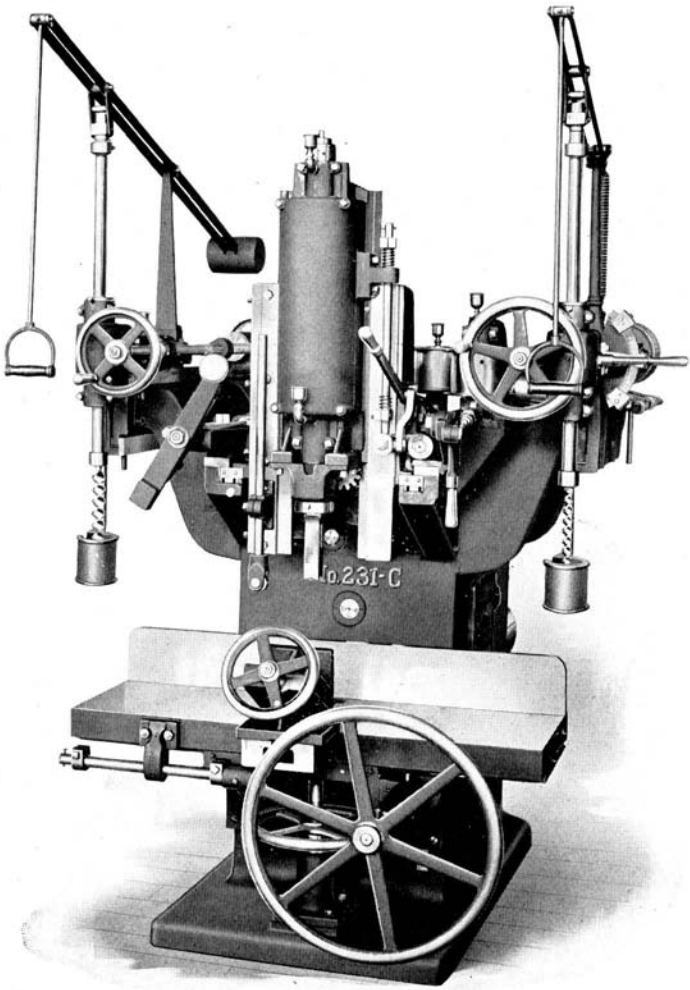
The Feed is continuous but is absolutely under the control of the hand lever for instantly stopping or starting. The table is fed to the tools at the rate of 7 strokes per minute and has quick return. Faster feed can be provided if required. The stroke is adjustable for 4, 5 or 6-inch lengths.

The Range is for mortises from 4-inch to 50-inch centers and for chisels up to 1-inch square regularly. For mortising with the maximum size in hard wood, machines should be secured with minimum centers of 4½ or 5 inches. Machines can be built special for larger than 1-inch chisels.

The Countershaft has 12x6½-inch tight and loose pulleys to run 750 R. P. M. When motor driven, a coupling is furnished in place of the pulleys. Motor varies from 10 to 15 H. P. according to work and number of spindles. The speed should be 900 R.P.M. or less.

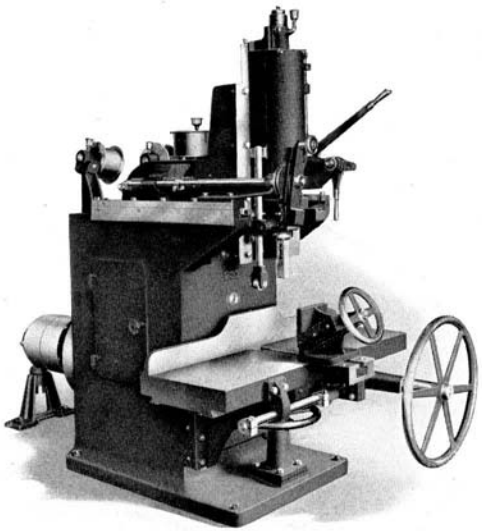
The Equipment includes one chisel and bit for each spindle, set of chisel and bit bushings, and the attached countershaft.

No.	No. of Spindles	Floor Space	Wt. in Lbs.	Code
212	3	6′ x 6′ 9″	4250	MAILBAG
212	4	6′ x 6′ 9″	4350	MAILCAR
212	5	6′ x 6′ 9″	4450	MAILMAN
212	6	6′ x 6′ 9″	4550	MAILSAC



No. 231-C Vertical Hollow Chisel Car Mortiser

No. 231-B has one Boring Attachment



No. 231

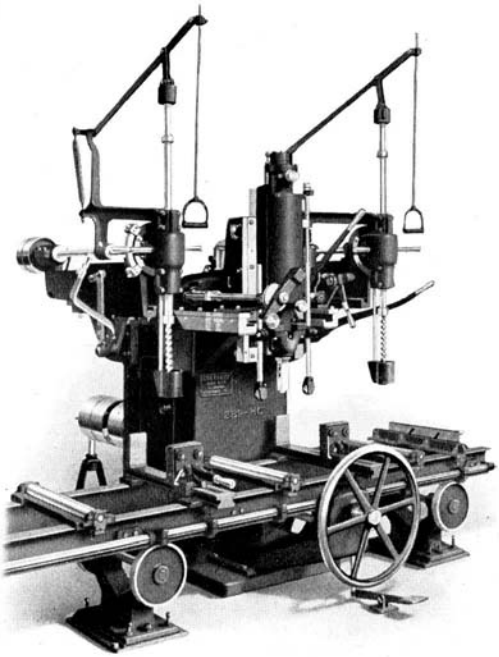
No. 231 Medium Vertical Hollow Chisel Car Mortiser

THIS Medium Mortiser with short compound table and boring attachments is a popular type for the smaller car shops, as it will completely frame average car timbers in one handling. Its range is for 1¾-inch chisels and 14-inch wide by 16-inch high timbers. Boring Attachments will handle 2½-inch bits. It is entirely self contained and arranged for belt or motor drive.

The Design embodies belt driven mortiser spindle with ball bearing thrust, belt release lever to stop the mortiser and allow the boring attachments to run alone, automatic feed mechanism entirely enclosed within the frame, lever control to start, stop or reverse the chisel stroke at any point, rapid return travel for chisel, adjustable mortising stroke up to 13-inch length, and also quick cross adjustment of chisel ram by a conveniently located self-locking handle.

No.	Style	Wt. in Lbs.	Code
231	No Boring Attachments	5100	MERGER
231-B	1 Boring Attachment	5750	MERGER-ODOR
231-C	2 Boring Attachments	6400	MERGER-ODIST

Complete descriptive circular will be sent upon request

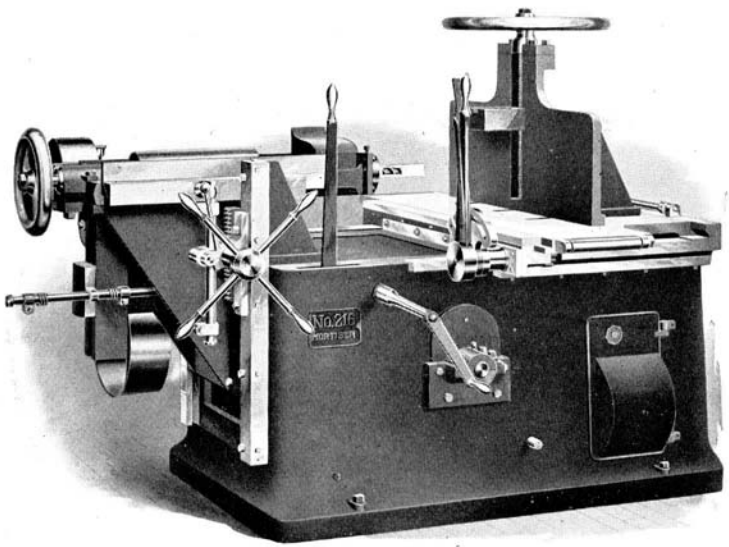


No. 232 Vertical Hollow Chisel Car Mortiser

THE design of this Car Mortiser closely follows that of our No. 231 type, but its size and range is between that of the No. 231 and No. 238. It is built with either a stationary table or with a long hand feed traveling table which permits its use in combination with our Automatic Gainer or Standard Car Borers. The range is for mortising with chisels up to 2-inch square, for boring with 3-inch or larger bits and handling timbers up to 16x18-inch.

No.	Style of Table	Boring Attachments	Code
232	Stationary	None	MERIDA
232-B	Stationary	1	MERIDA-ODOR
232-C	Stationary	2	MERIDA-ODIST
232-H	Traveling	None	MERIDALE
232-HB	Traveling	1	MERIDALE-ODOR
232-HC	Traveling	2	MERIDALE-ODIST

Complete descriptive circular will be sent upon request



No. 216 Heavy Horizontal Car Mortiser

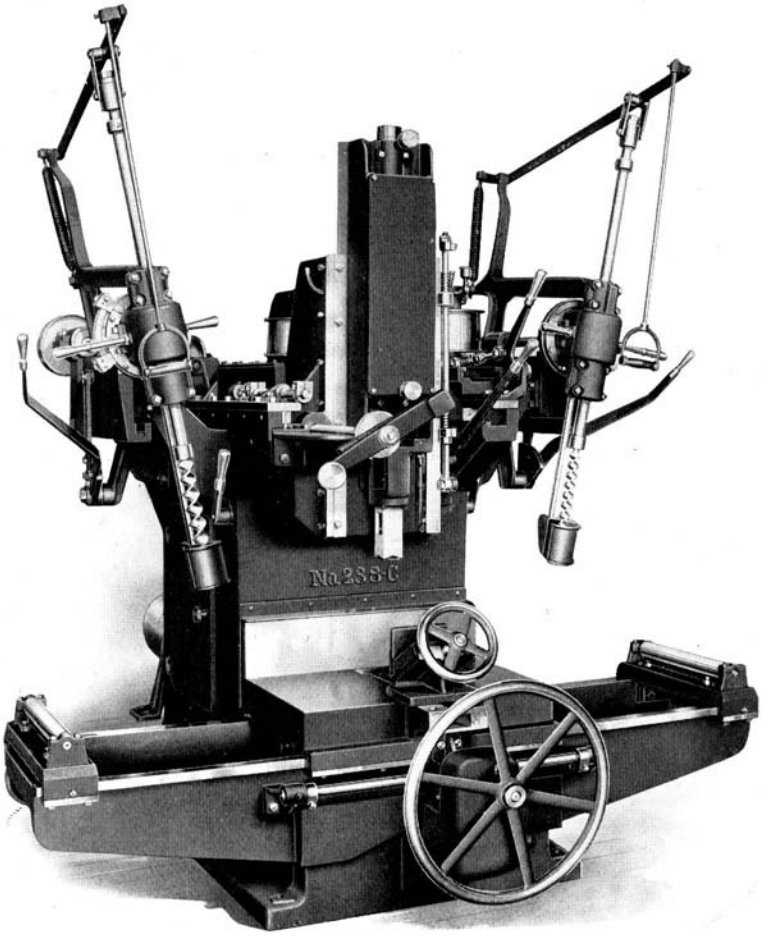
THE exclusive use of this No. 216 Horizontal Mortiser by most railway car building companies, is because of its rapid handling of duplicate mortising for new car construction. It is also widely selected for repair shops that are equipped with separate boring machines.

Its Superiority is due to the totally enclosed feed mechanism, large slow running frictions for the two feeding speeds and quick reverse, ease of adjustment of the chisel ram for double mortising, and the automatic feed with control for starting, stopping or reversing the ram from any position. The timber lays directly before the operator and the chips fall from the mortise. Lay-out stops gauge the movements for each operation.

The Range is for chisels up to 2½-inch square with 6½ or 8-inch blade, and working timbers up to 14x16-inch size. The base drive shaft of machine may have tight and loose pulleys, or flexible motor coupling.

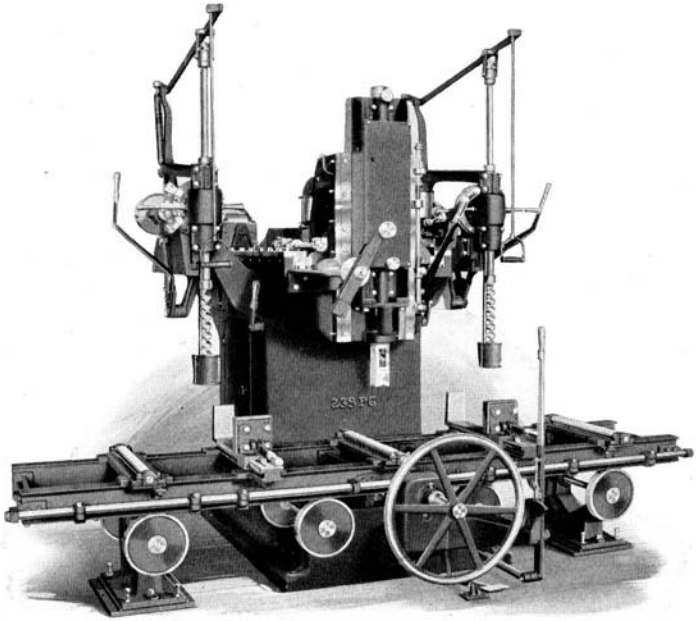
No.	Floor Space	Wt. in Lbs.	Code
216	9′ 6″ x 5′ 6″	5600	MANIFEST

Complete descriptive circular will be sent upon request



No. 238-C Extra Range Vertical Hollow Chisel Car Mortiser with Stationary Table

The table has a sliding clamping center section with lengthwise travel by hand wheel.



No. 238-PC with Power Feed Traveling Table

No. 238 Extra Range Vertical Car Mortiser

THIS design is the climax in Vertical Car Mortiser development. It is entirely self contained for belt or motor drive, and boring attachments, when added, may be operated independently. Among other perfected details are the enclosed feed mechanism running in oil, automatic feed with control for starting, stopping or reversing the stroke, ball bearing thrust for spindles, and cross adjustment of ram by self locking handle. The mortising range is for 2½ or 3-inch chisels and 18x20-inch timbers. The boring spindles handle 3-inch or larger bits.

No.	Style of Table	Boring Attachments	Code
238	Stationary	None	MERLE
238-B	Stationary	1	MERLE-ODOR
238-C	Stationary	2	MERLE-ODIST
238-P	Traveling	None	MERLUCE
238-PB	Traveling	1	MERLUCE-ODOR
238-PC	Traveling	2	MERLUCE-ODIST

Complete descriptive circular will be sent upon request