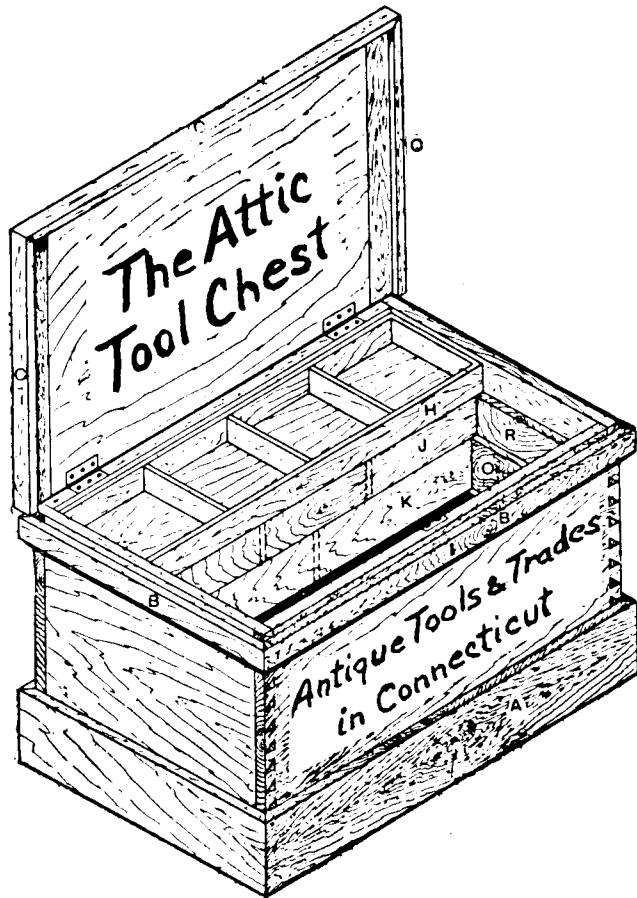


ATTIC DUSTApril Meeting

Program Chairman Tom Elliott and Bob Carlson have completed arrangements for our next meeting. It will be on 24 April at Wesleyan University at Middletown, Conn. The main features of the meeting will be two slide talks, by Al Staebner and Bill Downes. Al's talk was given at the Sturbridge Village meeting of E.A.I.A., and everyone agreed that it was a great job. We're very glad that he has consented to give it again for those of us who missed it the first time; its title is "A Farmer Turned Tool Collector". Bill's talk will be the next installment of one he gave to ATTIC, EAIA, and ACTIVE some time ago. This one is called "Tools in Distant Places", and will show tool collections as far away as England.

In addition to the above, we will have a brief business meeting, a display of new books, and the customary What'sit session (don't forget to bring them). Whereas we'll have coffee and doughnuts to revive you, when the coffee is ready, you'll need to bring your own lunch, unless you wish to try the Middletown fare, the city center is close by.

The expense of the meeting rooms and the required insurance will necessitate having a registration fee for each attendee over 16 of \$1.50. Most parking will be on a city street, so we're saying that tail-gate selling is discouraged this time, for safety reasons. The program and a map are on a separate sheet.

A Bargain

If you belong to Early American Industries Association, you can take advantage of a tremendous bargain, namely, a reprint of the first 25 years of its publication, *The Chronicle*, for \$20.00. The 1096 page book is \$48.50 to non-members. A copy will be available for examination at our upcoming meeting.

Joint Meeting

June 5 is still the date for our joint meeting with ACTIVE and TNT at Strawberry Banke in Portsmouth, New Hampshire. Notices of this meeting will be sent directly to you by the ACTIVE group, who are hosts for this meeting.

Wanted List

So far no one has used the opportunity offered in the last issue of the Attic Tool Chest to mention his need for particular parts of tools. If you have such needs, write to Wm. A. Downes, 987 River Road, Mystic, Ct. 06355, and describe what you want.

New Members

Again, we welcome new members whom we hope to see at the April meeting. Joseph Marino (Mary), 51 Mowry Ave., Norwich, Ct. 06360 (887-4816). Robert T. DeForest, 14 Crimmins Road, Darien. Ct. 06820.

Dues

Just a reminder that \$5.00 dues for 1977 are payable by mail to Frank

Bawden, Woodbine Lane, Newtown, Ct. 06470, or at our April meeting when you register. Incidentally, dues for B/ARS, mentioned in the last Tool Chest have been raised to \$5.00.

Excerpt From Modern Practical Joinery, by George Ellis, 1902

Your editor accompanied Ken Roberts on a trip to England, Scotland and Wales last winter. One of the consequences was that I bought more old books than tools. Two reasons, first, books are less expensive; second, you can ship books home at a much lower postal rate than you can tools. Anyway, one of the books had the very nice illustrations you will find on other sheets. There are unfamiliar terms in the first paragraph of the accompanying text, but fewer later on. The Rebate Plane deserves this note. The Oxford Dictionary indicates that "rebate" was a respelling of "rabbet", about 1674; and in technical use was pronounced as if written rabbet.

As you know, some planes have only the single blade or iron. The second iron, which stiffens the first, was introduced earlier than has been thought, as Ray Townsend indicates below.

\*\*\*\*\*

DOUBLE PLANE IRONS  
1773

Raymond R. Townsend, Williamsburg, Va.

Wallace, Davidson and Johnson was a well known eighteenth century merchant's firm in Baltimore, Maryland. Orders for merchandise were sent to partner Joshua Johnson, who went to London to handle the English end of the business. Copies of these orders, in excellent handwriting, were recorded in Order Books under various categories, such as, Iron Ware, Cutlery, Tin Ware, Haberdashery, Leather, Shoes ....

On 11 February 1773, among various tool orders, were listed the below planes.

JOINERS TOOLS

- 1 Trying ditto (Plane)
- 2 ditto double Iron'd
- 6 Smothen Planes sorted
- 2 ditto double iron'd
- 2 Pannel planes double iron'd

Other planes ordered:

1 Jointer; 1 Long Plane; 1 Trying ditto; 2 Strick Blocks with A tote; 2 ditto Common; 2 pair raising Planes; 2 Spring planes; 18 pair Hollows and Rounds; 18 pair ditto the same; 2 pair Table planes; 1 Moving Fillester; 2 Common ditto; 18 Ogees; 18 Ovels; 4 Sash planes; 2 ditto Gothick Mould of one size; 7 Bead planes; 5 Quarter Rounds; 6 Astragals; 12 Rabet Planes 4 of them Screw (skew); 3 Neck Moulds;... 1 Plow of the best kind; 3 Snipes bills; 4 Side Rabbet Planes ... 2 Sash Fillesters; 1 pair Groving Planes to Work Inch & half; 1 pair ditto - inch and Quarter; 1 pair ditto. Inch...

This is earlier documentary evidence of the double iron than 1798 found by Goodman.

(Source: Order Book, 1771-1774, pp 127-128. Permission to use this material granted by Hall of Records, Annapolis, maryland.)

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Please mail your contributions of articles and other items of interest to your editor: Wm. A. Downes, 987 River Road, Mystic, Ct. 06355

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ATTIC Officers: Wm. A. Downes, Pres.; Harvey Jeacock. V.Pres.; Peter Coope, Secretary; Frank Bawden, Treasurer. See membership list for addresses.

SPRING MEETING OF ATTIC

DATE: April 24, 1977, Sunday, 9:00 a.m. to 4:30 p.m.

LOCATION: Rooms 54 and 58 Science Center of Wesleyan  
University - Building 58 (see map reverse side)

PROGRAM: 9:00-10:00 Registration and socializing  
( Rooms open at 8:30 for set-up)  
10:00-11:00 Introduction, Business Meeting  
(Coffee when it's ready)  
11:00-12:00 Al Staebner: "A Farmer Turned Tool  
Collector"  
12:00-1:00 Lunch and socializing (Bring lunch)  
1:00-2:00 What'sit Session  
2:00-3:00 Bill Downes: "Tools In Distant Places"  
3:00- Discussion on joint meeting at Straw-  
berry Banke, Portsmouth, N.H.

PARKING: There will be parking in Lot D and on Lawn,  
Miles, Brainerd, and Home Avenues. Entry is  
at the south side of the Science Tower.

**TRAVEL TO WESLEYAN**

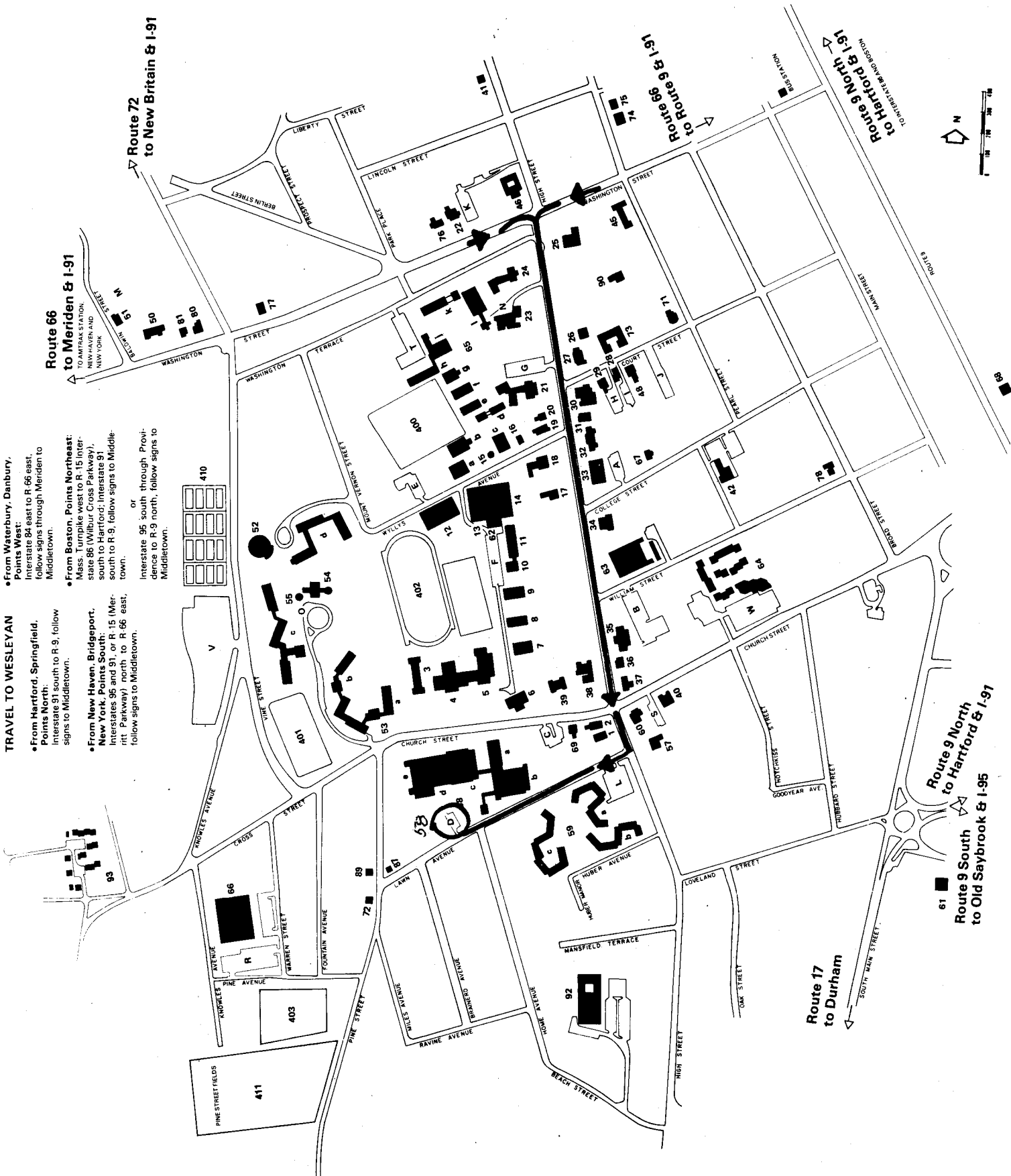
- From Waterbury, Danbury, Points West: Interstate 84 east to R 66 east, follow signs through Meriden to Middletown.
- From Boston, Points Northeast: Mass. Turnpike west to R-15 Interstate 86 (Wilbur Cross Parkway), south to Hartford; Interstate 91 south to R-9, follow signs to Middletown.
- or
- Interstate 95 south through Providence to R-9 north, follow signs to Middletown.
- From Hartford, Springfield, Points North: Interstate 91 south to R-9, follow signs to Middletown.
- From New Haven, Bridgeport, New York, Points South: Interstates 95 and 91, or R-15 (Meritt Parkway) north to R-66 east, follow signs to Middletown.

**Route 66 to Meriden & I-91**  
 TO AMTRAK STATION, NEW HAVEN AND NEW YORK

**Route 72 to New Britain & I-91**

**Route 17 to Durham**

**Route 9 North to Hartford & I-91**  
**Route 9 South to Old Saybrook & I-95**



**BENCH PLANES.**—The Jack Plane, f. 1, p. 13, is the first plane used in preparing stuff, its purpose being to remove irregularities left by the saw and produce a fairly smooth surface. It is also used generally for reducing scantlings quickly. It consists of a beechwood stock 17 in. long by 2½ in. by 3 in. with a 2½-in. cutting iron and similar back iron. The cutter is better parallel or gauged, as once fitted, the wedge will then always sit properly, and the size of the mouth remain the same throughout. This applies to all planes whose cutters are fixed by wedges. A ¾-in. stud or button of boxwood inserted in the nose of the plane will prevent it being disfigured by hammer marks (see f. 1 & 2). The best plane stocks are cleft or split in the natural laminæ of the wood, which ensures their remaining "true." Common qualities are cut by the saw nearly parallel to the beat of the fibres; but if these are cut across, the plane will "cast" and want continual reshooting. The stock should be so prepared that the medullary rays of the wood are perpendicular to the sole.

**Single-Iron Jacks or Hack Planes** are used for rough "scurfing" as a preliminary operation on extremely rough or dirty surfaces.

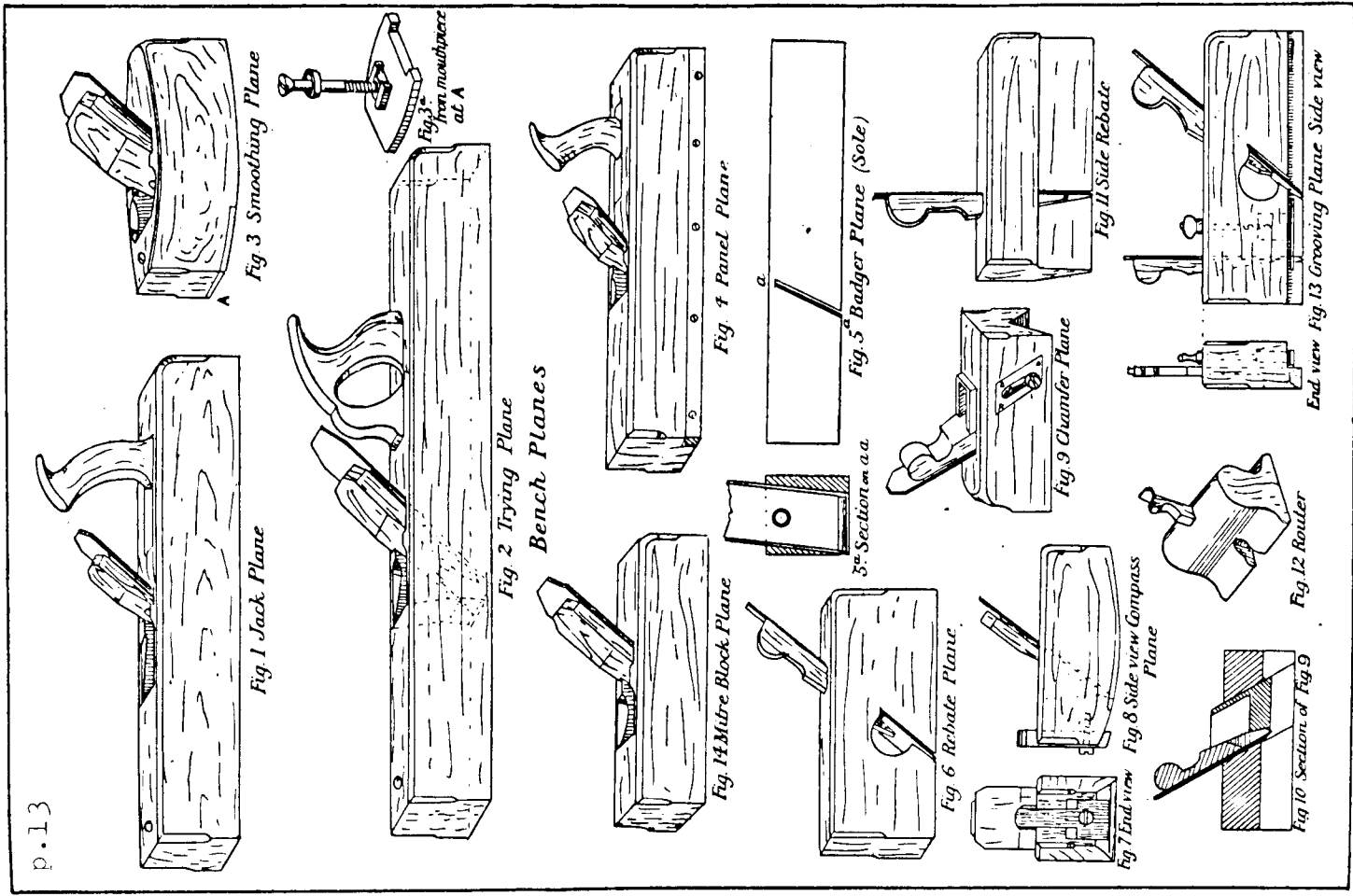
**The Trying Plane**, f. 2, p. 13, has a stock 23 in. long by 3 in. by 3 in., with a 2½-in. cutter. It follows the jack plane in reducing the wood to a truly plane surface, or in producing straight edges for joints, &c.

**The Smoothing Plane**, f. 3, is, as its name implies, used chiefly for smoothing or finishing the surface after manipulation by other planes. The standard size of stock is 8 in. by 3 in. by 2½ in., carrying 2½-in. double irons. In consequence of the frequent use of this plane, its mouth wears with comparative rapidity, and to avoid the continual renewal of the mouthpiece, **Iron Fronts** as shown at f. 3a are sometimes used; these are attached to the stock by an iron set screw passing through the nose of the plane, and are capable of easy readjustment longitudinally as the cutter wears; but they are rather difficult to refit accurately when the sole of the plane is shot. Apart from this, they are an undoubted improvement.

**METAL PLANES FOR HARDWOODS.**—Smoothing Planes are shown in f. 1 & 2, p. 15. The first is the American type of malleable cast-iron skeleton plane with tote handle at rear, and hand knob at the fore end, with adjustable mouthpiece, cam-setting lever (a), side adjusting lever (b), and screw adjustment for the cutting edge (c).

Jack and Trying planes are also made thus. The English type of smoothing plane, with wrought-iron or cast gun-metal shell, and hardwood filling, is shown in f. 2; this has a screw-down lever for adjusting and holding the cutter. The various advantages and disadvantages of the three types may be summarised as follows:—

The common Wooden Stock plane is comparatively low in price, and will stand rough usage better than either of the others, being in fact practically indestructible. It works rapidly and easily, and can be adjusted by means of the cover iron to suit hard or soft woods. On the other hand, it will not produce so highly a finished surface as a metal plane; and it requires frequent shooting, and remounting occasionally, to keep it in good condition. The English form of



metal plane will produce work of the highest class. It is of great weight and solidity, the latter quality having an important bearing on its results. It overcomes the resistance of cross grain and knots easily by its great momentum, and "tearing out" is prevented by the extremely fine mouth and great weight (see p. 7). Its disadvantages are, that it is fatiguing to work, the friction between metal and wood is greater than between wood only, and in common with all metal planes, in our moist atmosphere it is difficult to keep free from rust or verdigris, as it is made of steel or brass; and lastly, its first cost is relatively high.

The American type has for its chief recommendation relative cheapness and readiness of adjustment. It is easy to work, in consequence of its lightness, but this quality also acts detrimentally in causing it to "chatter," which prevents the production of so high a finished surface as the English form is capable of. However, its general results are higher than those of the common wood plane. Many ingenious time-saving attachments make it a rapid worker, but it is very fragile, and will seldom survive an accidental fall from the bench. One well-known American maker has introduced a plane with a corrugated sole, with the object of reducing the "bite" of the metal. The author has not personally tried one, but the result should be good, because there is obviously less friction to overcome.

**The Compass Plane, f. 7 & 8, p. 13,** is a smoothing plane with a convex sole, used for cleaning up curved surfaces. It has a sliding boxwood nose-piece shown hatched in the illustration, which may be moved downwards to make the sole fit the work to be planed. Fig. 8, p. 15, is the American variety, which has a malleable iron stock, carrying an adjustable cutter frame to which a spring steel face is attached. It will work either concave or convex surfaces. It has similar drawbacks to the smoothing plane mentioned previously.

**The Spokeshave, f. 8 & 9, p. 18,** is a variety of the compass plane, but adapted to quicker curves than the latter will enter. Fig. 8 is the older wood type of stock with double-tanged knife, now superseded by the iron stock (f. 9), with plane iron cutter and cover iron, a form much easier to sharpen than the other. They are made in several sizes with cutters from 1 1/4 in. to 4 in. wide. The best method of sharpening these cutters is to insert them tightly into a teerf made in the edge of a 3/8-in. strip of wood about 3 in. long which serves as a hand-grip.

**Preston's Patent Spokeshave** has both side and cut adjustment by lever and screw, and a cap-iron to regulate fineness of shaving. Made in malleable iron.

**Panel Planes** are made both in wood and metal, as they are required for working soft or hard wood. The former is illustrated in f. 4, p. 13, and has a removable wood slip on the right-hand side (drawn in reverse), to enable the plane to clean up sunk surfaces; length 14 in., cutter 2 1/2 in.

**Metal Panel Planes, f. 11, p. 15,** range in size from 9 in. with 2 1/4-in. irons, to 15 in. with 2 1/2-in. irons. Longer planes in this style, up to 20 1/2 in. long with 2 1/2-in. cutters, are called **JOINTERS**.

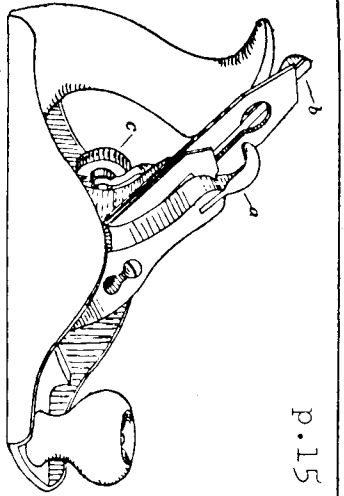


Fig 1 American Iron Smoothing Plane

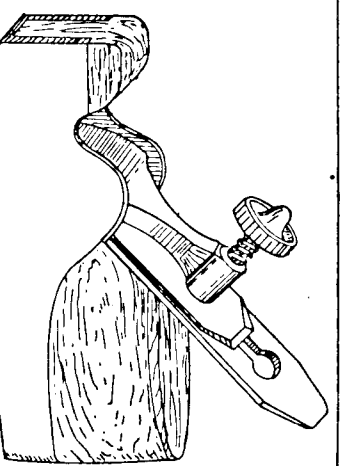


Fig 2 English-Metal Smoothing Plane

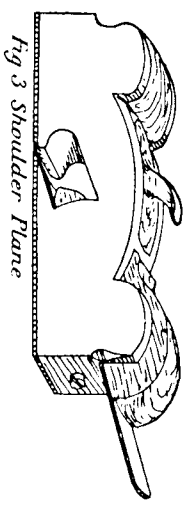


Fig 3 Shoulder Plane

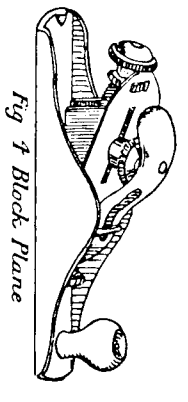


Fig 4 Block Plane

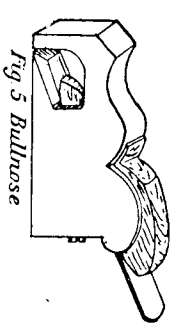


Fig 5 Bullnose

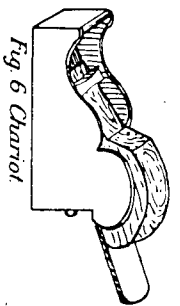


Fig 6 Charnol

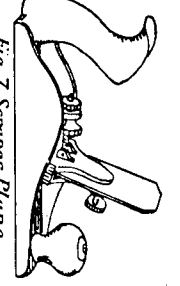


Fig 7 Souper Plane

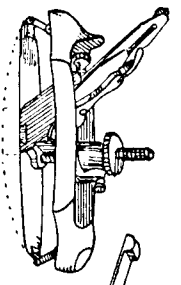


Fig 8 Compass Plane

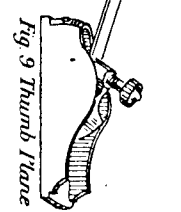


Fig 9 Thumb Plane

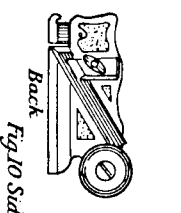


Fig 10 Side Rebate

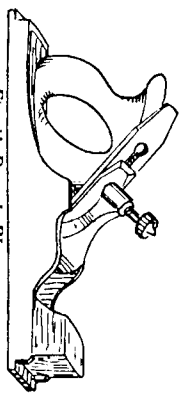


Fig 11 Panel Plane

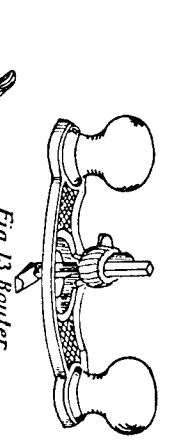


Fig 13 Router

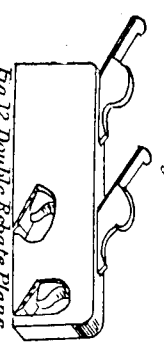


Fig 12 Double Rebate Plane

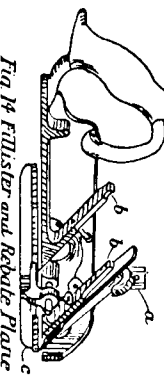
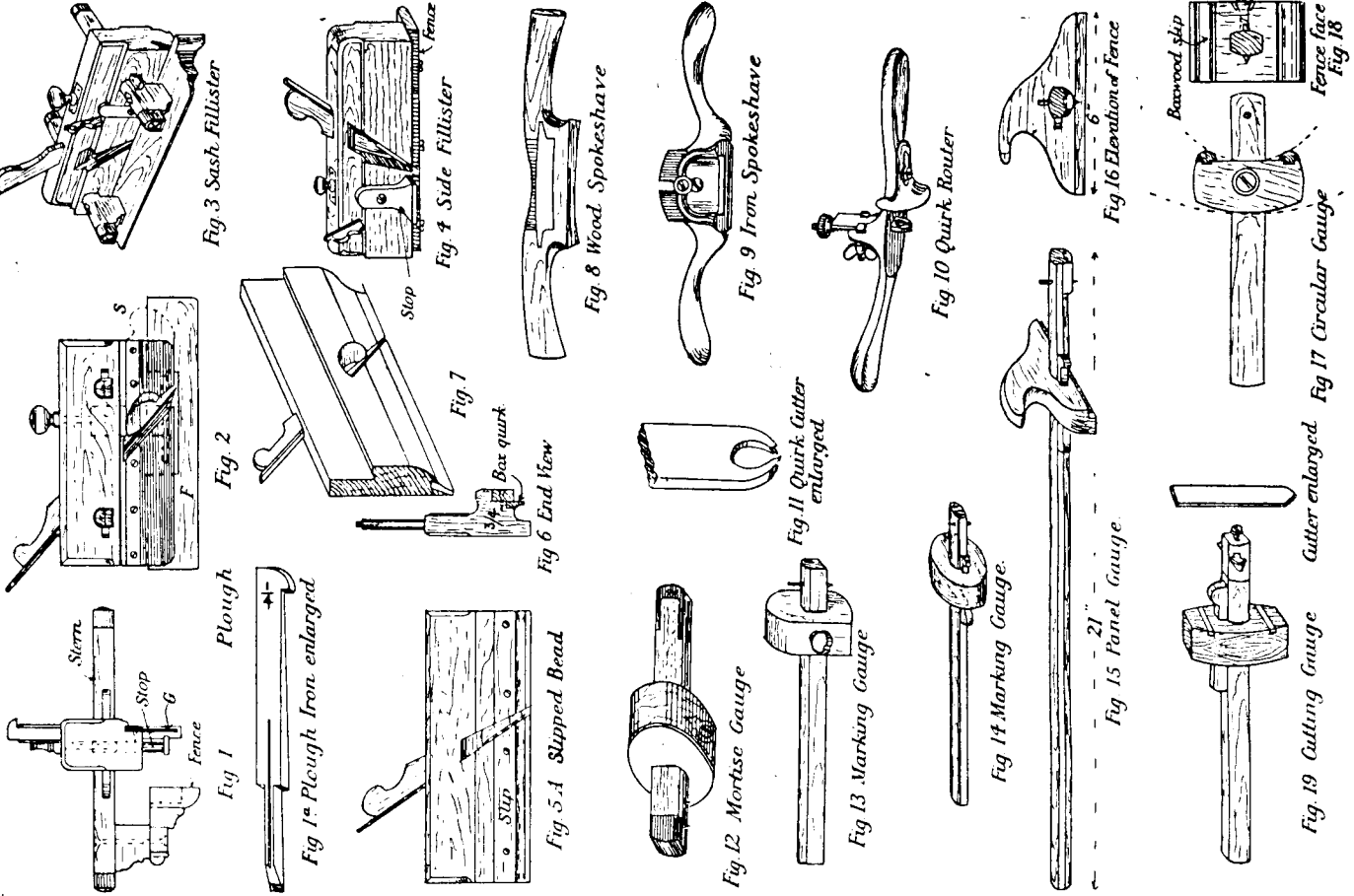


Fig 14 Filler and Rebate Plane



The Badger Plane is similar in size and appearance to the wood panel plane, but it has a skew mouth, and the cutter passes through the stock at an angle with the side, as shown in the section (f. 5a, p. 13), thus bringing the cutter up to the extreme right-hand edge of the sole (see f. 5), which enables the plane to be used for finishing sinkings, rebates, &c. Note that it is not used for making rebates, but for cleaning them off; it is both too cumbersome and too fine-cutting for the first purpose, but it is a most useful tool for finishing rebates, &c., after machining. All the above are DOUBLE IRON PLANES; i.e., the cutters have a "back" or cover iron to stiffen them, as shown in f. 2 and 5a, p. 13. The following are all Single Iron Planes.

**REBATING PLANES.**—The Wood Rebate Plane, f. 6, p. 13, as its name suggests, is chiefly used for forming rebates or sinkings upon the edges of material. It has a solid beech stock, 9 in. long, 3½ in. high, and from ¾ in. to 2 in. wide; it is made both with square and skew mouths; the latter works the better.

A Twin-iron Metal Rebate Plane is shown in f. 12, p. 15. These are intended for cleaning up hardwood rebates quickly, the front iron cutting coarse, the rear one fine; either one can be used alone when required.

These are also to be had with single irons only. The irons are used face down, as in shoulder planes; for reason see page 8.

The Shoulder Plane, f. 3, is a special form of rebate plane in metal, used principally for smoothing and correcting hardwood shoulders after the saw. The casting is hollow and filled in with a hardwood core. The iron is set face down and at a low angle. The wedge projects, to form a rest for the hand, and improved forms have a spur worked in the top core, just over the mouth which adds to the power of the grip. Square mouths are preferable in these planes, as they are required to work both right and left hand. The sketch shows a casting with gun-metal stock, having a steel face "sweated on;" these are the best for keeping a true face. Sizes 1½ in., 1¼ in., 1½ in., 1¼ in.

The Bullnose, f. 5, is another type of rebate plane in metal, its use being to finish off rebates and other narrow surfaces close up to stops or abutments. It is very essential in all planes that have their cutters face downwards that the face of the cutter be ground to a true plane, and not have to be forced into that position by the wedge. All of these planes are comparatively weak in the neck, and if wedged too tightly the sole will spring hollow and the mouth choke. Planes of this type should have a cheese-head screw at the back, to receive the release blows of the hammer.

The Sash Fillister, f. 3, p. 18, and the Side Fillister, f. 4, are both varieties of rebate planes. They are used to form rebates or sinkings; the first on the off side, the second on the near side of the material, as may be more convenient. They are each provided with vertical and horizontal adjustments, the first by means of rising and falling stops, the second by sliding fences. They have also a tooth or cutting knife slightly in advance of the cutting iron, to sever cross grain or to cut through knots.

A Combined Metal Fillister and Rebate Plane of American make is shown in f. 14, p. 15. This has an adjustable fence and two beds *b, b*, for the cutting iron, which may be used on either the front when rebating, or the rear when fillistering.

**GROOVING PLANES.**—The Trenching or Grooving Plane, f. 13, p. 13 is used for sinking trenches or grooves across the grain, as will be seen by the end view; it has a rebated sole, the cutters being in the tongue portion, which is usually made  $\frac{1}{2}$  in. deep, and varies in width from  $\frac{1}{4}$  in. to  $1\frac{1}{8}$  in. It has a screw-stop for adjusting the depth of cut, and a double-toothed cutter for separating the fibres in front of the iron.

The Plough, f. 1 & 2, p. 18, is an adjustable grooving plane of great utility. It will sink a groove of any width between  $\frac{3}{8}$  in. and  $\frac{1}{2}$  in., to any depth required, up to the depth of the guide iron of about  $1\frac{1}{4}$  in., and at any distance from the edge of the piece, within the length of the sliding stems. Some patterns have the front end of the guide turned up with a skate end, as indicated at s by dotted lines. These pass over mortises easily. There are nine irons to a set, as shown in f. 1a. In adjusting these, care must be taken to set the V groove in the iron accurately upon the fore end of the guide.

The Groove Router or Old Woman's Tooth, f. 12, p. 13, is used for increasing the depth and levelling the bottom of grooves formed by some other tool. It consists of a hardwood block about 5 in. long, 3 in. deep, and  $3\frac{1}{2}$  in. wide (the grain running in the latter direction), with a wedge. Plough irons are used for cutters. Fig. 13, p. 15, is an American variety in metal; it is provided with two cutters only,  $\frac{1}{4}$  in. and  $\frac{1}{2}$  in. It is easier to adjust than the English form.

The Quirk Router, f. 10, p. 18, is a tool for sinking narrow grooves in curved surfaces, chiefly in connection with mouldings; it has three knives or cutters of different thickness, as shown enlarged in f. 11; these are adjustable in both directions, as is shown in the sketch.

Side Rebates, f. 11, p. 13, are not used, as their name would suggest, for planing the sides of rebates, but for enlarging grooves. They are made in pairs to work right and left hand. The American pattern in metal is shown in back and front views in f. 10, p. 15. These have reversible nose-pieces which enable them to be worked up to the end of a stopped groove.

Block or Thumb Planes.—These are small planes of wood or metal, chiefly used for cleaning off small surfaces where the regular smoothing plane would be too cumbersome. It has not been thought necessary to illustrate the wood varieties, which are miniature Smooth and Rebate planes, but a circular variety of the latter is shown on p. 425.

An American Metal Block Plane is shown in f. 4, p. 15. This has an adjustable mouth which enables it to be used either for hard or soft wood, and a screw adjustment for the cutter, which is fixed by a screw lever. These planes are about 6 in. in length, with  $1\frac{3}{4}$  in. cutters.

The Metal Thumb Plane; English type, is shown in f. 9; it is 5 in. long, and 1 in.,  $1\frac{1}{8}$  in., and  $1\frac{1}{4}$  in. wide; it has a long cutter, which answers for a handle, and is secured with a gun-metal screw lever. It is, I believe, a speciality of Mr. George Buck, of 242 Tottenham Court Road, London, W. 1.

The Mitre Block Plane, f. 14, p. 13, is a short wood plane, with a relatively wide iron; its chief use is planing mitres in the screw mitre shoot, illustrated on p. 42. It is, I believe, procurable from Messrs. Nurse & Co., tool makers, from whom alone it can be obtained.

The Chariot Plane, f. 6, p. 15, is a small metal smoothing plane for hardwood,  $3\frac{1}{4}$  in. long, made in width from  $1\frac{1}{8}$  in. to  $1\frac{1}{2}$  in.

**MOULDING PLANES.**—Beads, f. 5 & 6, p. 18, are planes for producing a half-round moulding on the salient edge of any piece of wood used chiefly in framed openings to break the joint. They are made in sets of ten, from  $\frac{1}{8}$  in. to 1 in. The skew-mouthed work best, and it is an advantage to have the smaller sizes "slipped"—that is, with the fence piece screwed on—so that it may be removed to permit the plane sticking a bead on the edge of a moulding or other sunk surface. A Bead always has its quirk or sinking on the inner side, A Double-quirk Bead has a sinking on each edge. The Cock-head has no quirks, and stands above the surrounding surfaces. The planes used to stick these varieties are similar to the above.

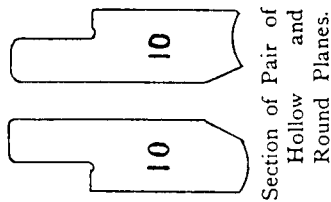
Hollows and Rounds (see figure) are planes for producing various convex and concave surfaces in mouldings. They are made in sets of nine and eighteen pairs of opposite but similar curvature, both square and skew-mouthed. The latter work the cleaner, but are more liable to choke than the former.

The Snipe Bill, f. 7, p. 18, and Side Snipe may be termed complementary Hollows and Rounds. They are used to carry the curved surface below some projecting member which the ordinary plane cannot reach. The snipe bill cuts on its curved side, the side snipe on its straight side; the one continuing the moulding, the other the quirk.

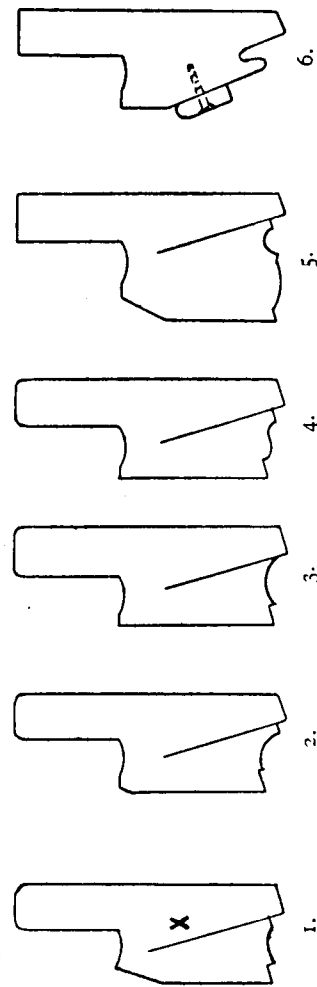
Sash Planes consist of Ovolo—Common, f. 1, p. 20; Do. Gothic, f. 2; Do. Grecian, f. 3; Ogee, f. 4; Astragal and Hollow, f. 5. These are all made to suit  $1\frac{1}{2}$ -in.,  $1\frac{3}{4}$ -in., and 2-in. stuff. Their use is practically confined to working mouldings on window sashes. Larger sizes of the ogee plane, working mouldings 2 in. and  $2\frac{1}{2}$  in. wide, are called Shop Front and Lamb's Tongue Planes.

Nosing and Scotia Planes are used for working half-round and cavetto mouldings respectively. When both curves are united in the same stock it is termed a STAIR TREAD MOULDER.

p. 20



Section of Pair of Hollow and Round Planes.



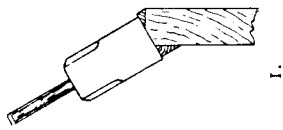
1. Section of Common Ovolo Sash Plane. 2. Section of Gothic Ovolo Sash Plane. 3. Grecian Ovolo Sash Plane. 4. Ogee or Lamb's Tongue Plane. 5. Astragal and Hollow Plane. 6. Hook Joint Plane.



**The Hook Joint Plane**, f. 6, is a tool used for forming the joint of that name upon the edges of casement sashes. The depth is adjustable by means of a sliding slot screwed stop, but the distance the plane works "on" cannot be varied. Smaller varieties are used in air-tight case work.

**The Chamfer Plane** is used for producing a regular chamfer upon the salient angle of a board, &c. There are several varieties of these planes. One of the best is shown in the sketch, f. 9, p. 13, and longitudinal section, f. 10; this has an adjustable stop, sliding in the mouth of the plane, which regulates the width of the resulting chamfer, which, however, is limited to an angle of 45 deg. with the sides. It is procurable from Messrs. Nurse & Co., tool makers. The author has utilised the common rebate plane for the purpose of chamfering, by gluing slips of hardwood to the sole of the plane, as shown in f. 11. These can be arranged to produce any width and any angle chamfer.

**The Scraper Plane**, f. 7, p. 15, is a tool very useful for giving a high finish to hardwoods, an ordinary steel scraper taking the place of the plane iron, which can be adjusted to any degree of fineness, by means of the set screw shown in the sketch. The pitch of the scraper can also be altered to suit the texture of the wood scraped. This tool may also be used as a *toothling* plane, by substituting a toothling iron for the scraper.



1.

#### MARKING OR DIMENSIONING TOOLS.

**GAUGES** are tools for producing lines upon the surface of wood, parallel with the edge they are used upon. There are various forms and sizes, according to the kind of work they are required for.

**The Mortise Gauge**, f. 12, p. 18, has a stem about 6 in. long, having two steel points, one fixed near the end, and the other attached to a brass slider, adjustable by means of a screw in the end of the stem. This enables two lines to be marked at any distance apart within the range of the slider. The stock or fence slides stiffly upon the stem, and is fixed by a flush set screw, the fence determining the distance of the lines from the edge of the material. The tool is chiefly used for setting out mortises and tenons. Some gauges have *two* movable teeth, and one fixed. These are used for gauging meeting rails of sashes.

**Marking or Single Tooth Gauges** are shown in f. 13 & 14, and a **Panel Gauge** in f. 15 & 16. The latter is used for gauging panels and other wide stuff, the fence being much larger than in the common gauge. It is also rebated on the lower edge to prevent it slipping under the pressure necessary to keep it down upon its work. The gauge point should have a hardwood slip (box for preference) under it, as shown in the drawing, to prevent the stem rubbing upon the surface of the work.

**The Circular Gauge**, f. 17 & 18, differs only from the straight marking gauge in having the fence shaped convex on one side, and concave on the other, to enable parallel lines to be drawn to curved surfaces, as indicated by the dotted lines.

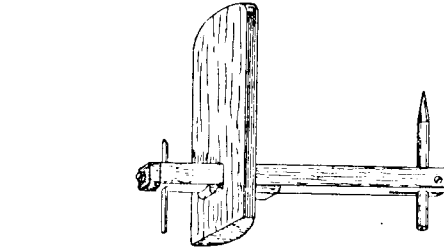
**The Cutting Gauge**, f. 19, has a small adjustable knife in the place of

the steel marking point of the other gauges. It is used for cutting off parallel strips of veneers and other thin stuff. The cutter, shown enlarged at A, is sharpened to a lancet point; the basil should be towards the stock.

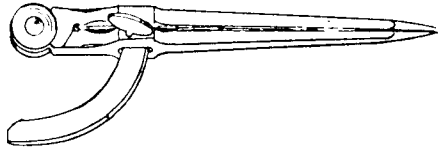
**The Grasshopper or Handrail Gauge**, f. 1 below, is chiefly used for gauging lines upon work of double curvature, such as handrail wreaths. It has a long fence to enable it to rise over the crown of the curve, and the stem is bored and slotted to receive at one end a pencil, and at the other a steel point. These are adjustable in height or distance from the stem, and the stem is adjustable on the fence, so that markings can be made upon any shaped surface.

**The Thumb or Pencil Gauge** is illustrated and described on p. 77.

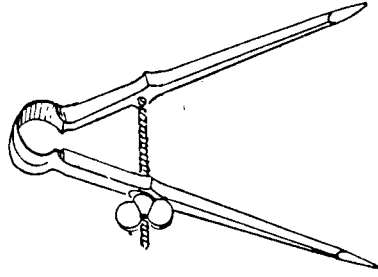
**The Compasses**, f. 2, are used chiefly for gauging parallel lines to irregular surfaces, such as the scribing of skirtings to floors, &c. They are also used for the same purpose as the drawing instruments of like name, describing circles, and setting off distances with more accuracy than can be obtained by simple measurements with the rule. There are two forms—the "common," and



1. Grasshopper Gauge.



2. Compasses.



3. Dividers.

the "wing," which has a quadrant arm and set screw. The latter only is illustrated, the first is a most untrustworthy tool. Sizes from 5 in. to 8 in. long.

**The Spring Dividers**, f. 3, are a lighter tool of the same description as the last, but more suitable for the bench. They are used for scribing the shoulders of mouldings, taking accurate dimensions, &c. The curved head is a highly tempered spring, tending to keep the legs open. They are closed by twisting the wing nut on the screw bar near the middle.

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