

U. S. DEPARTMENT OF COMMERCE

HARRY L. HOPKINS, Secretary

NATIONAL BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

BUILDERS' HARDWARE

(NONTEMPLATE)

(SECOND EDITION)

COMMERCIAL STANDARD CS22-40

(Supersedes CS22-30)

Effective Date for New Production from July 1, 1940



**A RECORDED VOLUNTARY
STANDARD OF THE TRADE**

UNITED STATES
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WASHINGTON : 1940

PROMULGATION
of
COMMERCIAL STANDARD CS22-40
for
BUILDERS' HARDWARE (NONTEMPLATE)
(Second Edition)

The first general conference of producers, distributors, and users held at the Department of Commerce, May 20, 1924, resulted in the publication of Simplified Practice Recommendation No. 18, Builders' Hardware, effective January 1, 1925. On the recommendation of the first revision conference in New York City on September 14, 1926, with the approval of the standing committee, and subsequently accepted by the trade, there was published Simplified Practice Recommendation No. 18, Builders' Hardware (first revision, September 14, 1926), effective May 1, 1927.

On May 7, 1929, the Advisory Committee on Standardization of Builders' Hardware, with the approval of the standing committee, adopted additional nomenclature, types, sizes, standard finishes, and practices, which, after written acceptance by the trade, were published as Builders' Hardware (Nontemplate), Commercial Standard CS22-30, effective for new production from June 1, 1930.

On April 16, 1940, upon recommendation of the Advisory Committee on Standardization of Builders' Hardware and with the endorsement of the standing committee, a further revision was circulated to the trade for written acceptance. Those directly concerned have since accepted and approved for promulgation by the United States Department of Commerce, through the National Bureau of Standards, the revised standard as shown herein.

The standard is effective for new production from July 1, 1940.

Promulgation recommended.

I. J. Fairchild,
Chief, Division of Trade Standards.

Promulgated.

Lyman J. Briggs,
Director, National Bureau of Standards.

Promulgation approved.

Harry L. Hopkins,
Secretary of Commerce.

BUILDERS' HARDWARE (NONTEMPLATE)

(Second Edition)

COMMERCIAL STANDARD CS22-40

PURPOSE

1. This standard for builders' hardware is established as a basis for common understanding between manufacturers, distributors, and users of this product.

SCOPE

2. This standard records standard nomenclature, definitions, finishes, hanging rules, mortises, and general practices for builders' hardware (nontemplate) as regards domestic use.

GENERAL PRACTICES

3. All labels shall indicate the predominating metal, in accordance with trade usages, of which the goods are made.

4. Manufacturers shall work toward packing all carton goods with screws.

5. In listing all kinds of builders' hardware with more than one dimension, the vertical dimension shall be given first.

RULES FOR HANDS OF LOCKS, CASEMENT-SASH TRIM, PLATES FOR DOUBLE-ACTING FLOOR HINGES, AND LOOSE-JOINT BUTT HINGES

6. It is recommended that the following rules be printed verbatim in each manufacturer's catalogue as early as practicable, together with such supplementary rules and illustrations as may be desired.

LOCKS

7. The hand of a lock, including locks for French doors, is determined from the outside of the door to which it is applied. The outside of a cupboard, bookcase, or closet door is the room side.

8. If, standing outside of a door, the butts are on the right, it takes a right-hand lock; if on the left, it takes a left-hand lock.

9. If, standing outside, the door opens from you, it takes a lock with a regular bevel latch bolt; if the door opens toward you, it takes a lock with a reverse bevel latch bolt.

CASEMENT SASH TRIM

(Including Cremone Bolts)

10. The hand of casement sash is taken from the room side. If the butts are on the right, it is a right-hand sash; if on the left, it is a left-hand sash. It is necessary to state whether sash opens in or out.

PLATES FOR DOUBLE-ACTING FLOOR HINGES

11. The hand of plates for double-acting floor hinges is determined from the open edge. When standing facing the door at the open edge, the plate on the right hand is a right-hand plate, and the plate on the left hand is a left-hand plate. See figure 1.

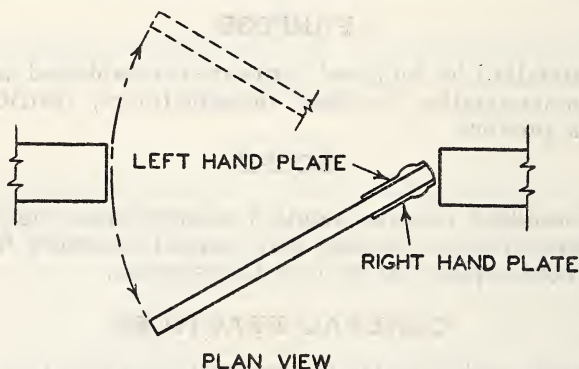


FIGURE 1. Hand of plates for double-acting floor hinges.

LOOSE-JOINT BUTT HINGES

12(a) The hand of a loose-joint butt hinge for a door is determined from the outside of the door to which it is applied. If standing outside of a door which opens FROM you, to the right, it takes right-hand loose-joint butt hinges; if to the left, it takes left-hand loose-joint butt hinges. If standing outside of a door which opens TOWARD you, to the right, it takes left-hand loose-joint butt hinges; if to the left, it takes right-hand loose-joint butt hinges.

12(b) The hand of a loose-joint butt hinge for a casement window is taken from the room side. If the window opens inward, to the left, it takes right-hand loose-joint butt hinges; if to the right, it takes left-hand loose-joint butt hinges. If the window opens outward, to the left, it takes left-hand loose-joint butt hinges; if to the right, it takes right-hand loose-joint butt hinges.

DETAIL REQUIREMENTS

BACKSETS

13. Regular and special backsets for mortise door locks and latches should be confined to the following dimensions, viz., 1, 1½, 2, 2½, 2¾, 3, or 3¼ inch. The purpose of this plan is to eliminate such special and irregular backsets as 1¼, 1¾, and 2¼ inch, as well as other intermediate and larger dimensions. A backset of 2¾ inches is also recognized for certain tubular and cylindrical case locks.

14. The following data are given to illustrate the application of the standard backsets to the various types of locks and latches:

(a) Locks and latches for French doors and narrow-stile doors, regular backset, 1½ inch; special backset, 2 inch.

(b) Light locks and latches for inside doors, regular backset, 2½ inch.

(c) Medium and heavy locks and latches for inside, office, front, vestibule, store, and other outside doors, regular backset, 2½ or 2¾ inch; special backsets, 2 and 3 or 3¼ inch. Mortise exit bolt locks, standard backset 2¾ or 2½ inch.

(d) Cylinder locks with gun or French spring for lever handles, regular backsets for grille, narrow stile, and other doors, 1, 1½, 2, and 2½ inch.

(e) Mortise casement fasteners or turnbuckles, regular backset, light, ¾ and 1 inch; medium, 1¾ or 1½ inch; heavy, 2 inch.

(f) Mortise double extension bolts, regular backsets, 1½, 2, and 2½ inch.

(g) In giving the backset for rabbeted locks, dimensions for both sides, or their equivalent, should be stated.

EXIT BOLTS

15. Exit bolts are designed to operate upon slight push, or upon both push and pull on cross bar, never upon pull alone.

PUSH BUTTONS

16. Eliminate all wrought-steel push buttons.

DESIGNS

17. In new wrought designs in addition to knobs and escutcheons list only: Key plates; French-window escutcheons; push buttons in bronze or brass only; door pulls in bronze or brass only; push plates in bronze or brass only, except plain type.

DOOR CLOSERS

18. Each door closer shall bear the name, initial, or registered trade-mark of the manufacturer. In addition, the manufacturer's size designation shall be permanently marked in the case, cover, arm, or cap in letters or figures of legible size.

TABLE 1.—*Applications for overhead door closers*

[Recommended application on doors subject to normal conditions. Where strong drafts are encountered, or where corner brackets locate the door closer more than ¾ inch nearer to the hinge than the normal mounting position, the next larger size should be applied]

| Size | Description and approximate maximum size of door |
|----------|--|
| I..... | Ordinary screen doors or light interior doors, 1¾ inches by 2 feet 6 inches by 6 feet 6 inches. |
| II..... | Heavy screen doors, 1¾ inches by 3 feet by 7 feet. Light interior doors, 1¾ inches by 2 feet 8 inches by 7 feet. Closet doors, 1¾ inches by 2 feet 8 inches by 7 feet. |
| III..... | Light exterior doors, 1¾ inches by 2 feet 6 inches by 7 feet. Corridor or office doors of wood or metal, 1¾ inches by 3 feet by 7 feet. |
| IV..... | Ordinary exterior doors, 1¾ inches by 3 feet by 7 feet 6 inches. Heavy interior doors of wood or metal, 2¼ inches by 4 feet by 7 feet 6 inches. |
| V..... | Heavy exterior doors, 2¼ inches by 3 feet 6 inches by 7 feet 6 inches. Heavy interior doors subject to strong drafts. |
| VI..... | Extra-heavy entrance doors 3 inches thick or over, or doors of unusual height or width, refrigerator doors, etc. |

19. Each checking floor hinge shall bear the name, initial, or registered trade-mark of the manufacturer. In addition, the proper Federal ¹ size designation shall be cast in the case of each device so as to

¹ Federal Specification FF-H-12L.

be visible after installation upon removal of the floor plate. The same size designation shall be cast in the outer case (cement case) so as to be visible after the outer case is set in concrete.

FINISHES

20. The standard finishes on builders' hardware recommended for normal use are listed in table 2.

TABLE 2.—Standard finishes for builders' hardware

| Symbol | General description | Metal applied to— | Samples selected as standard | Restrictions or characteristics |
|--------------------|--|--|--|--|
| <i>USP</i> | Primed for painting | ----- | ----- | ----- |
| <i>US1B</i> | Bright japanned | ----- | ----- | ----- |
| <i>US1D</i> | Dead black | ----- | ----- | ----- |
| <i>US2C</i> | Cadmium-plated | ----- | ----- | ----- |
| <i>US2G</i> | Zinc, electroplated | ----- | ----- | ----- |
| <i>US2H</i> | Zinc, hot-dipped | ----- | ----- | ----- |
| <i>US3</i> | Bright brass | Iron, steel, wrought and cast brass. | Yale <i>AZ10</i> | ----- |
| <i>US3A</i> | Bright brass, no lacquer. | Wrought and cast brass. | ----- | Limited to wrought and cast brass. ¹ |
| <i>US4</i> | Dull brass | Iron, steel, wrought and cast brass. | Corbin <i>EA</i> | ----- |
| <i>US5</i> | Dull brass, oxidized and relieved. | do | Russwin 9c..... | Limited to ornamental designs, plain hardware to match to be finish <i>US4</i> . |
| <i>US9</i> | Bright bronze | Iron, steel, wrought and cast bronze. | Yale <i>BZ10</i> | ----- |
| <i>US9A</i> | Bright bronze, no lacquer. | Wrought and cast bronze. | ----- | Limited to wrought and cast bronze. ¹ |
| <i>US10</i> | Dull bronze | Iron, steel, wrought and cast bronze. | Corbin <i>DB</i> | ----- |
| <i>US10A</i> | Dull bronze, oxidized. | Wrought and cast bronze. | Reading 271..... | Limited to plain surfaces. |
| <i>US10B</i> | Dull bronze, oxidized and oil-rubbed. | do | ----- | Limited on wrought bronze to butts. ¹ |
| <i>US11</i> | Dull bronze, oxidized and relieved. | Iron, steel, wrought and cast bronze. | Sargent <i>06P</i> | Limited to ornamental designs, plain hardware to match to be finish <i>US10</i> . |
| <i>US11A</i> | Dull bronze, oxidized and relieved, oil-rubbed. | Wrought and cast bronze. | ----- | Limited to wrought and cast bronze. ¹ |
| <i>US14</i> | Nickel-plated | Iron, steel, wrought and cast brass or bronze. | Russwin 4..... | Polished surfaces. |
| <i>US15</i> | Nickel-plated, dull | do | Lockwood 90..... | Limited to plain surfaces. |
| <i>US15A</i> | Nickel-plated, dull, oxidized and relieved. | do | Corbin <i>KE</i> | Limited to ornamental designs. |
| <i>US17A</i> | Nickel-plated, imitation half-polished iron sanded, oxidized and relieved. | do | Stanley <i>Y2</i> | ----- |
| <i>US18</i> | Bower barff | Iron and steel | Yale <i>FX80</i> | Abrasion resistant. |
| <i>US18A</i> | Sanded, rust-resisting black. | do | Yale <i>PX80</i> | Corrosion resistant. |
| <i>US19</i> | Sanded, dull black | Iron, steel, wrought and cast brass or bronze. | Yale <i>BX80</i> bronze. Yale <i>FX90</i> , steel.. | On iron and steel, same as <i>US18A</i> (Yale <i>PX80</i>). |
| <i>US20</i> | Statuary bronze ² | Wrought and cast bronze (see restrictions). | Penn <i>BBZ4</i> | Limited on iron and steel to butts. |
| <i>US25</i> | White bronze metal | Wrought and cast white bronze. | Sargent <i>EM</i> | Limited to white bronze compositions and to wrought white bronze in push plates, kick plates, and butts. |
| <i>US25D</i> | White bronze metal, dull. | do | Yale <i>NY40</i> | Do. |
| <i>US26</i> | Chromium-plated | ----- | ----- | Polished surfaces. |
| <i>US26D</i> | Chromium-plated, dull. | ----- | Corbin <i>DCR</i> | Do. |

¹ When finishes *US3A*, *9A*, *10B*, and *11A* are furnished on iron or steel, they will be coated with lacquer.

² See paragraph 22 for comparisons in finish *US20*.

21. *Comparison of finishes.*—It is the intention of each manufacturer who furnishes hardware in the standard finishes to bring his product into close conformity with the colors and effects indicated by the "US" symbols. Duplicate samples of the finishes selected as standard are used by the manufacturers as a guide in the production of standard finishes. However, owing to differences in the processes of producing these finishes and the variety of metals to which they are applied, it is impracticable to attain an exact match. Therefore, it is understood that hardware delivered in a standard finish from two or more sources will compare reasonably when the items are viewed at arm's length and approximately 2 feet apart. This approximates the conditions of use, as for example, hinges and lock trim on opposite edges of a door.

22. *Oxidized finishes* represent the natural aging of metals, and change with time; therefore, some variations from standard may be expected. An oxidized finish artificially produced may not match a similar finish produced by age. Statuary bronze, US20, is more difficult to produce in a given color (shade) than any other standard finish, including the other oxidized finishes. Therefore, a greater variation or tolerance is permitted in comparing items in this finish.

23. Samples of the standard finishes for which standard samples are required (column 4, table 2) are filed at the National Bureau of Standards for reference. Approved samples of these 18 standard finishes may be obtained (in full sets only) from the National Bureau of Standards at cost.

24. The standard finish symbols shown in column 1, table 2, shall be published opposite the manufacturers' corresponding finishes in the catalogs.

HINGES (NONTEMPLATE BUTT HINGES)

25. Extra-heavy butt hinges should be specified on doors where high-frequency service is expected. (See table 3.) Extra-heavy butt hinges are made in sizes $4\frac{1}{2}$ to 8 inches, inclusive. Whenever in table 4, regular-weight butt hinges are specified, but the door in question is of such a character as to come into the high-frequency classification, then extra-heavy butt hinges of the same length and width should be substituted.

26. Butt-hinge sizes given refer to length of joint.

27. Door sizes given are jamb opening dimensions.

28. All regular butt hinges are also available to template with machine screws, unless otherwise specified, and these will be designated by the regular type number followed by suffixed letters "TMS," but are not included in this pamphlet. (See CS9-33.)

29. As regards butt hinges in general, it is recommended:

(a) That all extra heavy brass or bronze ball-bearing butt hinges in $4\frac{1}{2}$ -inch sizes and larger, whether wrought or cast, be equipped with ball bearings between each pair of knuckles, that is, at each bearing surface.

(b) That all extra heavy steel ball-bearing butt hinges $4\frac{1}{2}$ -inch sizes and larger be equipped with ball bearings at each bearing surface.

(c) That ball-bearing wrought steel butt hinges and paumelles or olive knuckle hinges will be considered as also available from certain producers, with phosphor-bronze bearings.

(d) That all plated friction hinges be made only polished and heavily plated.

(e) That the clearance between the leaves of full mortise butt hinges when open with leaves parallel shall be $\frac{1}{16}$ inch, that is, when opened $\frac{1}{16}$ inch, the leaves shall be parallel.

TABLE 3.—*Expected frequency of operation of doors*

[Number of operations of one leaf of door opening and closing=1 cycle]

| Type of building and door | Expected frequency | |
|--------------------------------------|--------------------|-----------|
| | Daily | Yearly |
| Large department store entrance..... | 5,000 | 1,500,000 |
| Large office building entrance..... | 4,000 | 1,200,000 |
| Theater entrance..... | ¹ 1,000 | 450,000 |
| Schoolhouse entrance..... | 1,250 | 225,000 |
| Schoolhouse toilet door..... | 1,250 | 225,000 |
| Store or bank entrance..... | 500 | 150,000 |
| Office-building toilet door..... | 400 | 118,000 |
| Schoolhouse corridor door..... | 80 | 15,000 |
| Office-building corridor door..... | 75 | 22,000 |
| Store toilet door..... | 60 | 18,000 |
| Dwelling-house entrance..... | 40 | 15,000 |
| Dwelling-house toilet door..... | 25 | 9,000 |
| Dwelling-house corridor door..... | 10 | 3,600 |
| Dwelling-house closet door..... | 6 | 2,200 |

¹ Performance.

TABLE 4.—*Rules for sizes of nontemplate butt hinges*

| Thickness (in inches) | Width of doors or height of transoms (in inches) | Height ¹ of butt hinges (in inches) |
|---|--|--|
| $\frac{3}{4}$ to $1\frac{1}{4}$ cabinet doors..... | To 24..... | 2½. |
| $\frac{7}{8}$ and $1\frac{1}{8}$ screen or combination doors..... | To 36..... | 3. |
| $1\frac{1}{8}$ doors..... | { To 32..... | 3½. |
| | { Over 32 to 37..... | 4. |
| | { To 32..... | 4½. |
| | { Over 32 to 37..... | 5. |
| $1\frac{3}{4}$ doors..... | { Over 37 to 43..... | 5, extra-heavy. |
| | { Over 43 to 50..... | 6, extra-heavy. |
| 2, 2¼, and 2½ doors..... | { To 43..... | 5, extra-heavy. |
| | { Over 43 to 50..... | 6, extra-heavy. |
| $1\frac{1}{8}$ and $1\frac{3}{4}$ transoms..... | { To 20..... | 3. |
| | { Over 20 to 36..... | 3½. |
| 2, 2¼, and 2½ transoms..... | { To 20..... | 3½. |
| | { Over 20 to 36..... | 4. |

¹ Width of butt hinges as necessary to clear trim.

30. Doors to and including 60 inches high take 2 butt hinges; over 60 to and including 90 inches high take 3 butt hinges; and over 90 to and including 120 inches high take 4 butt hinges.

31. Transoms to and including 48 inches wide take 2 butt hinges; over 48 to and including 84 inches take 3 butt hinges.

32. In giving the sizes of butt hinges, the length of the joint should always be stated first.

PAINT CLEARANCES

33. All butt hinges for painting shall have inner edges of leaves cut back to provide clearance between the inner edges of leaves and the barrel as follows:

| Thickness of metal Inch | Minimum clearance Inch |
|----------------------------|---------------------------|
| Less than 0.090----- | 0.030 |
| 0.090 or greater----- | .040 |

WEIGHTS AND THICKNESSES

34. Nominal thicknesses for all regular weight wrought-bronze and wrought-steel door butt-hinges are as follows:

| Size | Thickness Inch |
|---------------|-------------------|
| 2 by 2----- | 0.083 |
| 2½ by 2½----- | .089 |
| 3 by 3----- | .092 |
| 3½ by 3½----- | .123 |
| 4 by 4----- | .130 |
| 4½ by 4½----- | .134 |
| 5 by 5----- | .146 |
| 6 by 6----- | .160 |

35. Nominal thicknesses for all extra-heavy wrought-bronze and wrought-steel door butt hinges are as follows:

| Size | Thickness Inch |
|---------|-------------------|
| 4½----- | 0.180 |
| 5----- | .190 |
| 6----- | .203 |
| 8----- | .203 |

36. The tolerance on thickness of wrought butt hinges shall be ± 0.005 inch.

37. Nominal weights for nontemplate cast butt hinges are given in table 5.

TABLE 5.—Weights of nontemplate cast butt hinges

[Ounces per pair without screws]

| Size | Cast bronze | | | Cast iron | |
|---------------|------------------------------|---|---------------------------------|----------------|--------------------|
| | Regular weight, steel bushed | Heavy-weight, steel, bushed or ball bearing | Extra-heavy-weight ball bearing | Regular weight | Extra-heavy weight |
| 3 by 3----- | 13 | (1) | (1) | 14 | 20 |
| 3½ by 3½----- | 17 | 20 | (1) | 19 | 27 |
| 4 by 4----- | 23 | 30 | | 28 | |
| 4½ by 4½----- | 35 | 40 | 54 | 37 | 47 |
| 5 by 5----- | 45 | 54 | 66 | 49 | 60 |
| 6 by 4----- | (1) | (1) | | (1) | |
| 6 by 6----- | 75 | 82 | 105 | (1) | 99 |
| 6 by 8----- | (1) | (1) | | (1) | 133 |
| 8 by 6----- | (1) | (1) | | (1) | |
| 8 by 8----- | (1) | (1) | | (1) | |
| 8 by 10----- | (1) | (1) | | (1) | |

¹ This size is not regularly manufactured.

KEYS

38. Master keying in all cylinder door locks to be confined to standard-size cylinders or larger.

39. Class *A* bit keys have bits not more than $\frac{1}{2}$ inch wide, the width of the bit being the dimension measured parallel to the barrel or post of the key.

40. Class *B* bit keys have bits greater than $\frac{1}{2}$ inch wide, the width of the bit being the dimension measured parallel to the barrel or post of the key.

LOCK FRONTS

41. Work toward elimination of all cast-iron lock fronts, flat or rabbeted.

42. Rabbeted locks and latches for cabinets, cupboard, and light French doors under $1\frac{3}{8}$ inches thick to have front with $\frac{3}{8}$ -inch rabbet. All other rabbeted locks to have front with $\frac{1}{2}$ -inch rabbet.

43. The standard bevel for beveled fronts is $\frac{1}{8}$ inch in 2 inches.

44. The standard radius for rounded fronts is 4 inches. For rabbeted rounded fronts, the inner radius shall be $3\frac{1}{2}$ inches and shall center on the same point as the 4-inch radius for the outer edge.

FLUSH BOLTS

45. The standard radius for rounded fronts on flush bolts is 4 inches.

SASH PULLEYS

46. It is recommended that:

(a) Manufacturers work toward the standard mortises (see figs. 2 and 3), and as patterns for turned wheel sash pulleys with cast

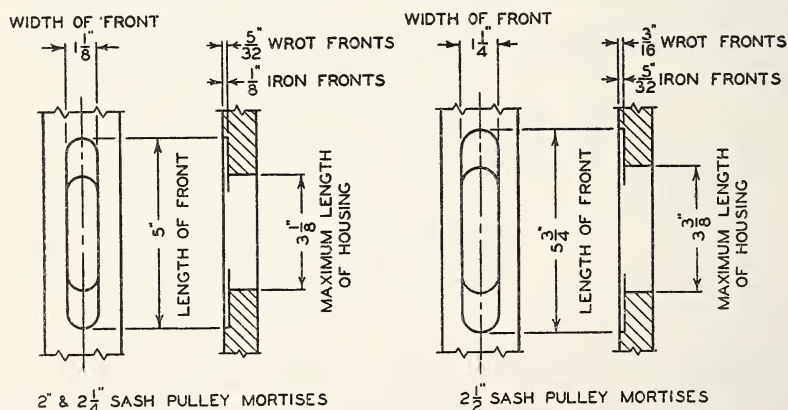


FIGURE 2.—Standard mortises for turned wheel sash pulleys with cast cases.

cases, and dies for wrought case pulleys are replaced or new lines are brought out, pulley cases should be modified to suit the standard mortises and given a new designation to avoid confusion with samples already distributed.

(b) All wrought fronts be made of No. 22 American Wire Gage (Brown & Sharpe) (0.025 inch) or heavier metal fastened to the regular iron face.

(c) All "applied" fronts be listed regularly in wrought brass or bronze.

(d) Furnish wrought bronze overlay fronts for bronze pulleys with cast-iron cases.

(e) Finish of all fronts on cast case sash pulleys to be standard bronze finish *US9*, regardless of finish on other hardware in the building.

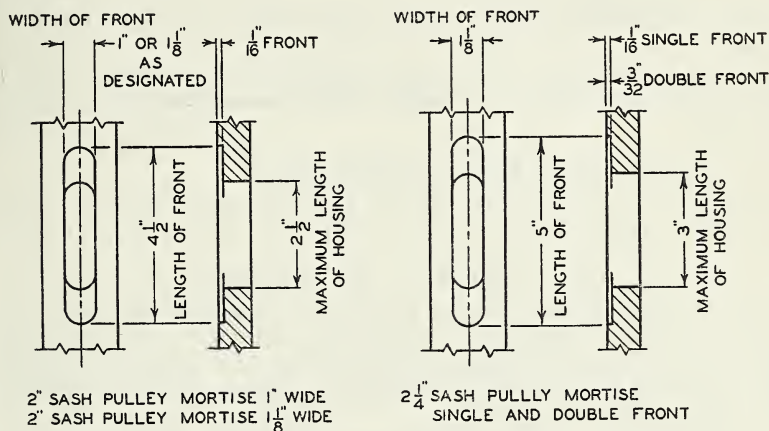


FIGURE 3.—Standard mortises for wrought-case pulleys.

DEFINITIONS

There are given below definitions of certain of the special terms as generally applied to builders' hardware by the trade and as used in this standard.

Backset.—The horizontal dimension from the front of a lock or latch to the vertical center lines of knob and/or keyhole.

Bit key.—A key having a projecting blade or wing which engages with and actuates either or both the bolt and tumblers of a lock.

Builders' hardware.—The term builders' hardware may be said to cover mechanical devices for supporting, guarding, operating, controlling, or securing the various movable parts of a building, such as doors, windows, transoms, drawers, gates, and scuttles; and for the convenience, protection, and safety of the occupant.

Cylinder.—A locking mechanism which is fitted with pin tumblers and operated by a paracentric or milled key. A *standard cylinder* is one with not less than five pin tumblers, operated with a paracentric or milled key and not less than 1 1/2 inches in diameter of cylinder back of the head.

Dead bolt.—A lock bolt, usually rectangular in cross section cut square on the end and moved positively by key or turn knob without the action of a spring.

Front.—The face of a lock through which the bolts move. It is usually mortised in so as to be flush with edge of door.

Full-surface.—A term applied mainly to hinges which are arranged for attachment entirely on the surface of the door and jamb, without mortising.

Half-mortise.—A term applied mainly to hinges designed for mortising the door leaf and for surface application of the jamb leaf.

Half-surface.—A term applied mainly to hinges designed for surface application of the door leaf and for mortising the jamb leaf.

Latch.—A fastening device which has a latch bolt, but without key function or dead bolt. (Exception, night latch.)

Latch bolt.—A spring bolt with a beveled face which is self-acting on closing the door.

Lock.—A fastening device which has a key function or dead bolt or both.

Entrance door locks.—The term "Entrance door locks" shall be applied only to cylinder locks with thumb pieces (handles) on one or both sides.

Front door locks.—The term "Front door locks" shall be applied only to locks with knob action on both sides.

Paracentric.—A key or keyway for pin-tumbler locks with longitudinal ribs and grooves on both sides projecting beyond the center line to prevent picking.

Pin tumbler.—A term applied to locks, or cylinders for same, having a series of small cylindrical pins actuated by separate springs and cut in two at varying locations so as to form obstacles to rotation of the plug in the shell unless set by the proper key. In this type, the cylinders containing pin tumblers and rotating plug are usually a separable part of the lock mechanism.

Spacing.—The vertical dimension between the horizontal center line of knob and keyhole.

Stop works.—A lock function which renders one knob or bolt operative or inoperative at will; usually controlled by a pair of push buttons in the lock front.

Tumbler.—Movable construction in a lock consisting of a lever, latch, wheel, slide, pin, and the like, which must be adjusted to a particular position by a key or other means before the bolt can be thrown.

Turn knob.—A small knob usually round, oval, or crescent shaped, to control bolts from the inside of door. Sometimes called "thumb turn" or "thumb knob."

Warded key.—One having grooves or notches, usually in the wing or bit, which coincide with corresponding wards or projections in the lock case or keyhole.

ARCHITECTURAL DETAILS

With reference to architectural details affecting hardware, it is recommended that:

(a) The face width of door stiles be cataloged and specified in preference to over-all width.

(b) The face width of stiles for all standard $1\frac{3}{8}$ -inch and $1\frac{1}{4}$ -inch doors be not less than $4\frac{1}{8}$ inches.

(c) The term "French window" should be applied to glazed, narrow-stile openings hinged at the side, which do not extend to the floor, and the face width of stiles for such openings should be not less than 2 inches.

(d) The term "French door" should be applied to glazed, narrow-stile openings hinged at the side, which extend to the floor, and the face width of stiles for such openings should be not less than 3 inches.

(e) All rabbets should be eliminated as a standard practice, and wherever unavoidable, a $\frac{1}{2}$ -inch-square rabbet, not beveled, should be used.

(f) The setback for door trim (casings) should be not less than $\frac{3}{4}$ inch.

(g) Contractors should be urged to have doors fitted to the frames by dressing off the hinge stile before applying the butts, thus providing space for the lock and improving the appearance of the door.

(h) Millwork manufacturers should work toward the proposed standard mortises for sash pulleys. See figures 2 and 3 for such sash pulleys as are not sold with the frames.

(i) It is unnecessary and impracticable to mount knobs at the exact center of the door stile.

EFFECTIVE DATE

The standard is effective for new production from July 1, 1940.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each association nominated its own representative. Comment concerning the standard and suggestions for revision, may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

Manufacturers:

W. A. HEIZMANN (chairman), Penn Hardware Co., Reading, Pa.

J. F. HART, The Stanley Works, New Britain, Conn.

W. S. JOHNSON, P. & F. Corbin, New Britain, Conn.

Distributors:

T. W. McALLISTER, Southern Hardware Jobbers Association, 1020 Grant Bldg., Atlanta, Ga.

ARTHUR MAY, May Hardware Co., 1818 New York Ave., NE., Washington, D. C.

RIVERS PETERSEN, National Retail Hardware Association, 915 Security Trust Bldg., Indianapolis, Ind.

Users:

THEODORE I. COE, American Institute of Architects, 4000 Cathedral Ave., Washington, D. C.

ROBERT B. BEACH, National Association of Building Owners and Managers, 134 South La Salle Street, Chicago, Ill.

J. HAROLD DUMBELL, National Contract Hardware Association, Fulton Bldg., Pittsburgh, Pa.

HISTORY OF PROJECT

The war service committee of the Builders' Hardware Manufacturers, C. B. Parsons, chairman, at the request of the War Industries Board and under the stress of war, produced in June 1918, a general specification for builders' hardware suited to dwelling houses. This specification was the initial movement toward standardization of builders' hardware in the industry, but was unfortunately discarded December 1, 1918, along with all other pledges under the War Industries Board.

The manufacturers' group met for the first time November 9, 1922, with S. W. Stratton, then Director of the National Bureau of Standards, presiding, and set up the Advisory Committee on Standardization of Builders' Hardware.

The first general conference of producers, distributors, and users was held at the Department of Commerce May 20, 1924, which resulted in the publication of Simplified Practice Recommendation No. 18, Builders' Hardware, effective January 1, 1925.

The first revision conference was held in New York City on September 14, 1926, to adopt additional recommendations of the Advisory Committee on Standardization of Builders' Hardware. These revisions, subsequently approved by the standing committee and accepted by the industry, were incorporated in Simplified Practice Recommendation No. 18, Builders' Hardware (first revision September 14, 1926), effective May 1, 1927.

On May 7, 1929, the Advisory Committee on Standardization of Builders' Hardware, with the approval of the standing committee, adopted a commercial standard for builders' hardware (nontemplate), superseding the previous simplified practice recommendation, with additions to cover such items as exit bolts, exit locks and latches, garage hinges, checking floor hinges, and blind hardware. Following acceptance, this was published as Builders' Hardware (Nontemplate), Commercial Standard CS22-30, effective for new production from June 1, 1930.

On April 16, 1940, on recommendation of the Advisory Committee on Standardization of Builders' Hardware and with the endorsement of the standing committee, there was circulated to the trade for approval a recommended revision, further reducing the list of standard finishes in line with past experience, eliminating all type numbers, and otherwise bringing the standard into accord with current practice. Upon acceptance by a satisfactory majority of those directly concerned, establishment of the revision was announced on June 3, 1940.

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date _____

Division of Trade Standards,
National Bureau of Standards,
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS22-40 as our standard of practice in the

Production ¹ Distribution ¹ Use ¹

of builders' hardware (nontemplate).

We will assist in securing its general recognition and use and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City and State _____

¹ Please designate which group you represent by drawing lines through the other two. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations and individuals listed below have accepted this commercial standard as their standard of practice in the production, distribution, and use of builders' hardware (nontemplate). Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor that producers so listed guarantee all of their products in this field to conform with the requirements of this standard. Therefore specific evidence of conformity should be obtained where required.

ASSOCIATIONS

| | |
|---|--|
| American Specification Institute, Chicago, Ill. | Michigan Retail Hardware Association, Lansing, Mich. (In principle.) |
| Architects League of Northern New Jersey, Cliffside Park, N. J. | Missouri Retail Hardware Association, St. Louis, Mo. |
| Associated General Contractors of America, Inc., The, Washington, D. C. | National Association of Builders Exchanges, Washington, D. C. |
| Building Officials Conference of America, Inc., Washington, D. C. | National Association of Building Owners & Managers, Chicago, Ill. |
| California Retail Hardware Association, San Francisco, Calif. (In principle.) | National Contract Hardware Association, Pittsburgh, Pa. |
| Chicago District, Building Material Merchants of, Chicago, Ill. (In principle.) | National Retail Hardware Association, Indianapolis, Ind. |
| Chicago Retail Hardware Association, Chicago, Ill. | National Wholesale Hardware Association, The, Philadelphia, Pa. |
| Consumers Cooperatives Associated, Amarillo, Tex. | St. Louis Retail Hardware Association, St. Louis, Mo. |
| Dairymen's League Cooperative Association, Inc., New York, N. Y. | Structural Service Bureau, Philadelphia, Pa. |

FIRMS

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|---|--|
| Acme Well Supply Co., New York, N. Y. | Barker, Rose & Kimball, Inc., Elmira, N. Y. |
| Adams, Elwood, Inc., Worcester, Mass. | Barney, W. Pope, Philadelphia, Pa. |
| Adams, Franklin O., Tampa, Fla. | Baumer, Herbert, Columbus, Ohio. |
| Allen, Harris C., San Francisco, Calif. | Beacham & LeGrand, Greenville, S. C. |
| Allen & Son, George W., LaPorte, Ind. | Bell, M. Dwight, Minneapolis, Minn. |
| Allen Co., Inc., Walter H., Dallas, Tex. | Best Universal Lock Co., Inc., Indianapolis, Ind. |
| Altfillisch, Charles, Decorah, Iowa. | Bickford, Robert Turner, Elmira, N. Y. |
| American Hardware Corporation, The (successor to Russell & Erwin Manufacturing Co.), New Britain, Conn. | Bishop, Horatio W., Los Angeles, Calif. |
| American Potash & Chemical Corporation, Trona, Calif. | Blackwell, Wielandy Co., St. Louis, Mo. |
| Andersen Foundry Co., Bayport, Minn. | Blake, Edgar Ovet, Evanston, Ill. |
| Andrews, Jones, Biscoe & Whitmore, Boston, Mass. | Blithe, Wesley Leshner, Philadelphia, Pa. |
| Atkinson, Inc., R. J., Brooklyn, N. Y. | Blumberg Co., Inc., William L., New York, N. Y. |
| Auler, Jensen & Brown, Oshkosh, Wis. | Bogner, Harry, Milwaukee, Wis. |
| Austin & Shambleau, South Bend, Ind. | Bommer Spring Hinge Co., Brooklyn, N. Y. |
| Babcock, Hinds & Underwood, Inc., Binghamton, N. Y. | Bovard, William R., Kansas City, Mo. |
| Baker, Hamilton & Pacific Co., San Francisco, Calif. | Brainerd, Harry B., New York, N. Y. (In principle.) |
| Balch & Lippert, Madison, Wis. | Brainerd Manufacturing Co., The, E. Rochester, N. Y. |

- Brown, W. J., Cedar Rapids, Iowa.
 Brust & Brust, Milwaukee, Wis.
 Bucky, Fred W., Jr., Jacksonville, Fla.
 Buffalo Bolt Co., N. Tonawanda, N. Y.
 Builders Hardware & Supply Co., Inc.,
 Portland, Oreg.
 Burke Hardware Co., Frank, Waukegan,
 Ill.
 Caldwell Manufacturing Co., The,
 Rochester, N. Y.
 Camlet, J. Thomas, Clifton, N. J.
 Candela, Rosario, New York, N. Y.
 Cannon & Mullen, Salt Lake City,
 Utah.
 Carder, Macon O., Amarillo, Tex.
 Cayton, Herbert C., Honolulu, T. H.
 Champion Hardware Co., The, Geneva,
 Ohio.
 Chandler & Barber Co., Boston, Mass.
 Chaney Hardware, Montpelier, Ind.
 Chantrell Lock Corporation, New York,
 N. Y.
 Charlotte Hardware Co., Charlotte,
 N. C.
 Chesler & Sons Co., J., Brooklyn, N. Y.
 Chiaverini, Francis, Providence, R. I.
 Chicago Spring Hinge Co., Chicago, Ill.
 Child, Harry Charles, Sayre, Pa.
 Clinton Lock Co., Clinton, Iowa.
 Coit, E., New York, N. Y.
 Colladay Hardware Co., The Frank,
 Hutchinson, Kans.
 Columbus Builders Supply Co., Inc.,
 Columbus, Ohio.
 Community Hospital, San Mateo, Calif.
 Conrad & Cummings, Binghamton,
 N. Y.
 Conrow, H. S., Wichita, Kans.
 Conwell & Co., E. L., Philadelphia, Pa.
 Coolidge, Shepley, Bulfinch & Abbott,
 Boston, Mass.
 Cooper, David M., Ambridge, Pa.
 Corbin, P. & F., New Britain, Conn.
 Cram & Ferguson, Boston, Mass.
 Crowell & Lancaster, Bangor, Maine.
 Cummins, Robert J., Houston, Tex.
 DeJarnette, Charles Wagner, Des
 Moines, Iowa.
 Delehanty, Andrew L., Albany, N. Y.
 Dent Hardware Co., The, Fullerton, Pa.
 Detroit Hardware Manufacturing Co.,
 Detroit, Mich.
 Deutz & Bro., A., Laredo, Tex.
 Dirlt, George J., Buffalo, N. Y.
 District of Columbia, Washington, D. C.
 Dodge Corporation, F. W., Chicago, Ill.
 Dodge & Morrison, New York, N. Y.
 Donovan, John J., Berkeley, Calif.
 Drake Hardware Co., Burlington, Iowa
 Dunham, Carrigan & Hayden Co., San
 Francisco, Calif.
 Dutton & Sons Co., W. M., Hastings,
 Nebr.
 Eagle Lock Co., New York, N. Y.
 Earle Hardware Manufacturing Co.,
 Reading, Pa.
 Eckles Co., W. G., New Castle, Pa.
 Edwards & Walker Co., Portland,
 Maine.
 Eichenlaub, Geo. E., Erie, Pa.
 Eldridge, Charles William, Oswego,
 N. Y.
 Emery Industries, Inc., Cincinnati,
 Ohio.
 English, Harold T., Hutchinson, Kans.
 Everett & Associates, H. F., Allentown,
 Pa.
 Federal Engineering Co., Davenport,
 Iowa.
 Fitz-Gibbon, T. David, Norfolk, Va.
 Flannagan, Eric G., Henderson, N. C.
 Forsblom & Parks, Wichita, Kans.
 Fort Pitt Hardware Co., Pittsburgh, Pa.
 Frankfurth Hardware Co., Milwaukee,
 Wis.
 Franklin Hardware Co., New York,
 N. Y.
 Frantz & Spence, Saginaw, Mich.
 Fries, Beall & Sharp Co., Inc., Wash-
 ington, D. C.
 Gall, Harry L. C., New York, N. Y.
 Gardner Hardware Co., Minneapolis,
 Minn.
 Gardner-Vail, Inc., Chicago, Ill.
 Glynn-Johnson Corporation, Chicago,
 Ill.
 Goldberg & Sons, Inc., G., New York,
 N. Y.
 Grand Rapids Hardware Co., Grand
 Rapids, Mich.
 Great Lakes Supply Corporation, Chi-
 cago, Ill.
 Grand Specialties Co., Chicago, Ill.
 Grant Pulley & Hardware Co., Wood-
 side, Long Island, N. Y.
 Griffin Manufacturing Co., Erie, Pa.
 Grimm Hardware Co., Inc., W. H.,
 Chicago, Ill.
 Haessler Hardware Co., H. F., Mil-
 waukee, Wis.
 Hager & Sons Hinge Manufacturing
 Co., C., St. Louis, Mo.
 Hallberg & Beersman, Chicago, Ill.
 Hannaford & Sons, Samuel, Cincinnati,
 Ohio.
 Hardware Age, New York, N. Y. (In
 principle.)
 Harper & Reynolds Corporation, Los
 Angeles, Calif.
 Harper & West, Boston, Mass.
 Harvard Lock Co. of New York, Inc.,
 New York, N. Y.
 Harvey Metal Corporation, The, Chi-
 cago, Ill.
 Hasness, C. D., Harrisburg, Pa.
 Haughton Elevator Co., Toledo, Ohio.
 Haxby & Bissell, Minneapolis, Minn.
 Heitmann Co., F. W., Houston, Tex.
 Helfensteller, Hirsch & Watson, St.
 Louis, Mo.
 Helmle, H. P., Springfield, Ill.
 Henkle & Joyce Hardware Co., Lincoln,
 Nebr.

- Higginbotham-Pearlstone Hardware Co., Dallas, Tex.
- Hodgdon & Son, Charles, Chicago, Ill.
- Hoke, Karl Buckir ham, Toledo, Ohio.
- Hope, Frank L., Jr., San Diego, Calif.
- Hopkins, Albert Hart, Buffalo, N. Y.
- Houston, Better Business Bureau of, Houston, Tex. (In principle.)
- Hutchings, E. T., Louisville, Ky.
- Illinois Lock Co., The, Chicago, Ill.
- Illinois, University of, Urbana, Ill.
- Illinois, University of, Department of Architecture, Urbana, Ill. (In principle.)
- Ives Co., The H. B., New Haven, Conn.
- Ivey, Inc., Edwin J. Seattle, Wash.
- James Co., Thomas M., Boston, Mass.
- Jamme, Bernard E., Summit, N. J.
- Johnson, G. W., Berwick, Pa.
- Johnson, Keplar B., Seattle, Wash.
- Johnson, Wallwork & Dukehart, Portland, Oreg.
- Kane & Keyser Hardware Co., Belington, W. Va.
- Keckonen Hardware Co., Calumet, Mich.
- Keich & O'Brien, Warren, Ohio.
- Kimball, Steel & Sandham, Omaha, Nebr.
- Kirchoff & Rose, Milwaukee, Wis.
- Knappe & Vogt Manufacturing Co., Grand Rapids, Mich.
- Knighton & Howell, Portland, Oreg.
- Kohn, Robert D., Charles Butler, New York, N. Y.
- Kruse & Parish, Davenport, Iowa.
- Kyle, Herbert S., Charleston, W. Va. (In principle.)
- Lambie Co., Inc., James B., Washington, D. C.
- Lamson & Sessions Co., The, Cleveland, Ohio.
- Lang & Witchell, Dallas, Tex.
- Larrick, Thomas, Athens, Ohio.
- Larson Hardware Co., Sioux Falls, S. Dak.
- Latenser & Sons, Inc., John, Omaha, Nebr.
- Law, Law & Potter, Madison, Wis.
- Lawrence Bros., Inc., Sterling, Ill.
- Lawrence, Holford & Allyn, Portland, Oreg.
- Lee Hardware Co., The, Salina, Kans.
- Lee & Hewitt, Paterson, N. J.
- Lee, W. H., Philadelphia, Pa.
- Leonard Hardware Co., Inc., Chas., Petersburg, Va.
- Levy, Will, St. Louis, Mo.
- Lewers & Cooke, Ltd., Honolulu, T. H.
- Liggett Drug Co., Inc., New York, N. Y.
- Lockwood Hardware Manufacturing Co., Fitchburg, Mass.
- Loeb, Laurence M., White Plains, N. Y.
- Long Beach, Better Business Bureau of, Long Beach, Calif.
- Lucht & Anderson, Cliffside Park, N. J.
- Lynch & Foard, Wilmington, N. C.
- Mann & Co., Hutchinson, Kans.
- Marr, Richard H., Detroit, Mich.
- Marshall Wells Co., The, Spokane, Wash.
- Martin & Son, A. Oscar, Doylestown, Pa.
- Mason & Co., George D., Detroit, Mich.
- Massena & du Pont, Wilmington, Del.
- Mauran, Russell, Crowell & Mullgardt, St. Louis, Mo.
- McKinney Manufacturing Co., Pittsburgh, Pa.
- Millard, Julian, Harrisburg, Pa.
- Miller & Yeager, Terre Haute, Ind.
- Milwaukee Stamping Co., Milwaukee, Wis.
- Molther, F. R., Ancon, C. Z.
- Monarch Manufacturing Co., Detroit, Mich.
- Moore, Alvin Roger, Atlanta, Ga.
- Mooser, William, San Francisco, Calif.
- Morgan, D. H., Philadelphia, Pa.
- Morley Bros., Saginaw, Mich.
- Mueller & Hair, Hamilton, Ohio.
- Muhlenberg Bros., Reading, Pa.
- Mundie, Jensen, Bourke & Havens, Chicago, Ill.
- National Lock Co., Rockford, Ill.
- New Orleans, Inc., Better Business Bureau of, New Orleans, La. (In principle.)
- Newman Bros., Inc., Cincinnati, Ohio.
- Norfolk & Western Railway Co., Roanoke, Va.
- Northup & O'Brien, Winston-Salem, N. C.
- Norton Door Closer Co., Chicago, Ill.
- Norton Lasier Co., Chicago, Ill.
- Norwalk Lock Co., New York, N. Y.
- Officer, Gwynn, Berkeley, Calif.
- Pancoast, Russell T., Miami Beach, Fla.
- Paxton & Gallagher Co., Omaha, Nebr.
- Payson Manufacturing Co., The, Chicago, Ill.
- Penn Hardware Co., Reading, Pa.
- Perfecite Co., The, Cleveland, Ohio.
- Perry Hardware Co., The, New Lexington, Ohio.
- Pfeifer, Frederick, New York, N. Y.
- Phoenix Lock Works, Newark, N. J.
- Pierce Hardware Co., Taunton, Mass.
- Rayl Co., The, Detroit, Mich.
- Reading Hardware Corporation, Reading, Pa.
- Reid, William H., Jr., Billings, Mont.
- Richmond Hardware Co., Richmond, Va.
- Rindge & Rindge, Grand Rapids, Mich.
- Ritchie, James H., & Associates, Boston, Mass.
- Rite Hardware Manufacturing Co., Los Angeles, Calif.
- Rixson Co., The Oscar C., Chicago, Ill.
- Roanoke Hardware Co., Inc., Roanoke, Va.

- Robert & Co., Inc., Atlanta, Ga.
 Robertson Co., J. E., Milwaukee, Wis.
 Rochester, Board of Education of,
 Rochester, N. Y.
 Rochester Sash Balance Co., Inc.,
 Rochester, N. Y.
 Rogerson Co., Inc., J. C., Hudson, N. Y.
 Roll-Away Window Screen Co., Berkeley,
 Calif.
 Rudolph & West Co., Washington, D. C.
 Russell & Erwin Manufacturing Co.,
 New Britain, Conn.
 Russell & Co., J., Holyoke, Mass.
 Rutter Supply Co., Houston, Tex.
 Safe Padlock & Hardware Co., The,
 Lancaster, Pa.
 Sargent & Co., New Haven, Conn.
 Sargent & Greenleaf, Inc., Rochester,
 N. Y.
 Scamell, Ralph E., Topeka, Kans.
 Schaeffler, Joseph C., New York, N. Y.
 Schirmer, Robert F., Woodhaven, N. Y.
 Schlage Lock Co., San Francisco, Calif.
 Schoeppe, Edward, Philadelphia, Pa.
 Schroder Co., The J. B., Cincinnati,
 Ohio.
 Schweizer, Albert C., New York, N. Y.
 Sears, Roebuck & Co., Chicago, Ill.
 Seidel Manufacturing Co., St. Louis,
 Mo.
 Shapiro & Sons, Harry, Philadelphia,
 Pa.
 Shelby Spring Hinge Co., The, Shelby,
 Ohio.
 Shire, Edward I., New York, N. Y.
 Shutts & Morrison, Erie, Pa.
 Sidells, Arthur F., & Ellis M. Keppel,
 Warren, Ohio.
 Simmons Hardware Co., St. Louis, Mo.
 Sirrine & Co., J. E., Greenville, S. C.
 Skillman Hardware Manufacturing Co.,
 Trenton, N. J.
 Sleeper, Harold R., New York, N. Y.
 Southern Hardware, Atlanta, Ga.
 Southwestern Bell Telephone Co., St.
 Louis, Mo.
 Specification Record, Chicago, Ill.
 Stanley Works, The, New Britain, Conn.
 Start, Cedric, Hollywood, Fla.
 Staub, John F., Houston, Tex.
 Stauffer, Eshleman & Co., Ltd., New
 Orleans, La.
 Steffens-Amberg Co., The, Newark,
 N. J.
 Steinman Hardware Co., Lancaster, Pa.
 Sterling Hardware Manufacturing Co.,
 Chicago, Ill.
- Stewart, George, Portland, Oreg.
 Stoetzel, Ralph E., Chicago, Ill.
 Stopper, Eugene A., Philadelphia, Pa.
 Stover Manufacturing & Engine Co.,
 Freeport, Ill.
 Strevell-Paterson Hardware Co., Salt
 Lake City, Utah.
 Sweet's Catalog Service, New York,
 N. Y. (In principle.)
 Taylor, Ellery K., Philadelphia, Pa.
 Taylor, Henry L., St. Petersburg, Fla.
 Taylor Co., H. D., Buffalo, N. Y.
 Thomson-Diggs Co., The, Sacramento,
 Calif.
 Thorne, Henry Calder, Ithaca, N. Y.
 Tilden & Pepper, Philadelphia, Pa.
 Tilghman Moyer Co., Inc., Allentown,
 Pa.
 Tyrrell Hardware Co., Beaumont, Tex.
 United Lumber Co., St. Louis, Mo.
 Virginia Polytechnic Institute, Blacks-
 burg, Va.
 Vogel, Willis A., Toledo, Ohio.
 Vonnegut Hardware Co., Indianapolis,
 Ind.
 Voorhees, Walker, Foley & Smith, New
 York, N. Y.
 Walsh, Louis A., Waterbury, Conn.
 Walsh, William Henry, Chicago, Ill.
 Wardwell Hardware Co., Inc., Rome,
 N. Y.
 Warner Hardware Co., Minneapolis,
 Minn.
 Weinberg, Joseph L., Cleveland, Ohio.
 Welch, Carroll E., Huntington, N. Y.
 Western Metal Supply Co., San Diego,
 Calif.
 Whitaker, Courtney L., Dravosburg,
 Pa.
 Willatsen, Andrew, Seattle, Wash.
 Willson, Fred F., Bozeman, Mont.
 William's Hardware Co., Fort Smith,
 Ark.
 Wischmeyer, Wm. F., St. Louis, Mo.
 Woltersdorf, Arthur, Chicago, Ill.
 Wood & Son, Associates, Edward J.,
 Clarksburg, W. Va.
 Woodwell Co., Joseph, Pittsburgh, Pa.
 Wright, Frank H., Detroit, Mich. (In
 principle.)
 Wyeth Hardware & Manufacturing Co.,
 St. Joseph, Mo.
 Yale & Towne Manufacturing Co., The,
 Stamford, Conn.
 Young, A. M., Seattle, Wash.
 Zimmerman, A. C., Los Angeles, Calif.
 Zoller & Muller, New York, N. Y.

U. S. GOVERNMENT

- Federal Loan Agency, Federal Housing
 Administration, Washington, D. C.
 Federal Works Agency, United States
 Housing Authority, Washington, D. C.
 Interior, U. S. Department of, Office of
 Indian Affairs, Construction Division,
 Washington, D. C.
 National Youth Administration for
 Ohio, Columbus, Ohio.
- Treasury Department, Washington, D. C.
 Treasury Department, U. S. Coast
 Guard, Chicago, Ill.
 Treasury Department, Procurement Di-
 vision, Washington, D. C.
 Veterans' Administration, Washington,
 D. C.
 War Department, Washington, D. C.

COMMERCIAL STANDARDS

| CS No. | Item | CS No. | Item |
|--------|--|--------|---|
| 0-40. | Commercial standards and their value to business (third edition). | 49-34. | Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes. |
| 1-32. | Clinical thermometers (second edition). | 50-34. | Binders board for bookbinding and other purposes. |
| 2-30. | Mopsticks. | 51-35. | Marking articles made of silver in combination with gold. |
| 3-38. | Stoddard solvent (second edition). | 52-35. | Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze). |
| 4-29. | Staple porcelain (all-clay) plumbing fixtures. | 53-35. | Colors and finishes for cast stone. |
| 5-40. | Pipe nipples; brass, copper, steel, and wrought iron. | 54-35. | Mattresses for hospitals. |
| 6-31. | Wrought-iron pipe nipples (second edition). Superseded by CS5-40. | 55-35. | Mattresses for institutions. |
| 7-29. | Standard weight malleable iron or steel screwed unions. | 56-36. | Oak flooring. |
| 8-33. | Gage blanks (second edition). | 57-40. | Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition). |
| 9-33. | Builders' template hardware (second edition). | 58-36. | Woven elastic fabrics for use in overalls (overall elastic webbing). |
| 10-29. | Brass pipe nipples. Superseded by CS5-40. | 59-39. | Woven dress fabrics—testing and reporting (second edition). |
| 11-29. | Regain of mercerized cotton yarns. | 60-36. | Hardwood dimension lumber. |
| 12-40. | Fuel oils (fifth edition). | 61-37. | Wood-slat venetian blinds. |
| 13-39. | Dress patterns (second edition). | 62-38. | Colors for kitchen accessories. |
| 14-39. | Boys' button-on waists, shirts, junior and polo shirts (made from woven fabrics) (second edition). | 63-38. | Colors for bathroom accessories. |
| 15-29. | Men's pajamas. | 64-37. | Walnut veneers. |
| 16-29. | Wall paper. | 65-38. | Wool and part-wool fabrics. |
| 17-32. | Diamond core drill fittings (second edition). | 66-38. | Marking of articles made wholly or in part of platinum. |
| 18-29. | Hickory golf shafts. | 67-38. | Marking articles made of karat gold. |
| 19-32. | Foundry patterns of wood (second edition). | 68-38. | Liquid hypochlorite disinfectant, deodorant, and germicide. |
| 20-36. | Staple vitreous china plumbing fixtures (second edition). | 69-38. | Pine oil disinfectant. |
| 21-39. | Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition). | 70-38. | Coal tar disinfectant (emulsifying type). |
| 22-40. | Builders' hardware (nontemplate) (second edition). | 71-38. | Cresylic disinfectants. |
| 23-30. | Feldspar. | 72-38. | Household insecticide (liquid spray type). |
| 24-30. | Standard screw threads. | 73-38. | Old growth Douglas fir standard stock doors. |
| 25-30. | Special screw threads. | 74-39. | Solid hardwood wall paneling. |
| 26-30. | Aromatic red cedar closet lining. | 75-39. | Automatic mechanical draft oil burners. |
| 27-36. | Mirrors (second edition). | 76-39. | Hardwood interior trim and molding. |
| 28-32. | Cotton fabric tents, tarpaulins, and covers. | 77-40. | Sanitary cast-iron enameled ware. |
| 29-31. | Staple seats for water-closet bowls. | 78-39. | Ground-and-polished lenses for sun glasses. |
| 30-31. | Colors for sanitary ware. | 79-39. | Blown, drawn, and dropped lenses for sun glasses. |
| 31-38. | Wood shingles (fourth edition). | 80-41. | Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market). |
| 32-31. | Cotton cloth for rubber and pyroxylin coating. | 81-41. | Adverse-weather lamps for vehicles (after market). |
| 33-32. | Knit underwear (exclusive of rayon). | 82-41. | Inner-controlled spotlamps for vehicles (after market). |
| 34-31. | Bag, case, and strap leather. | 83-41. | Clearance, marker, and identification lamps for vehicles (after market). |
| 35-31. | Plywood (hardwood and eastern red cedar). | 84-41. | Electric tail lamps for vehicles (after market). |
| 36-33. | Fourdrinier wire cloth (second edition). | 85-41. | Electric license-plate lamps for vehicles (after market). |
| 37-31. | Steel bone plates and screws. | 86-41. | Electric stop lamps for vehicles (after market). |
| 38-32. | Hospital rubber sheeting. | 87-41. | Red electric warning lanterns. |
| 39-37. | Wool and part wool blankets (second edition). | 88-41. | Liquid-burning flares. |
| 40-32. | Surgeons' rubber gloves. | | |
| 41-32. | Surgeons' latex gloves. | | |
| 42-35. | Fiber insulating board (second edition). | | |
| 43-32. | Grading of sulphonated oils. | | |
| 44-32. | Apple wraps. | | |
| 45-40. | Douglas fir plywood (domestic grades) (fourth edition). | | |
| 46-40. | Hosiery lengths and sizes (third edition). | | |
| 47-34. | Marking of gold-filled and rolled-gold-plate articles other than watch cases. | | |
| 48-34. | Domestic burners for Pennsylvania anthracite (underfeed type). | | |

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

