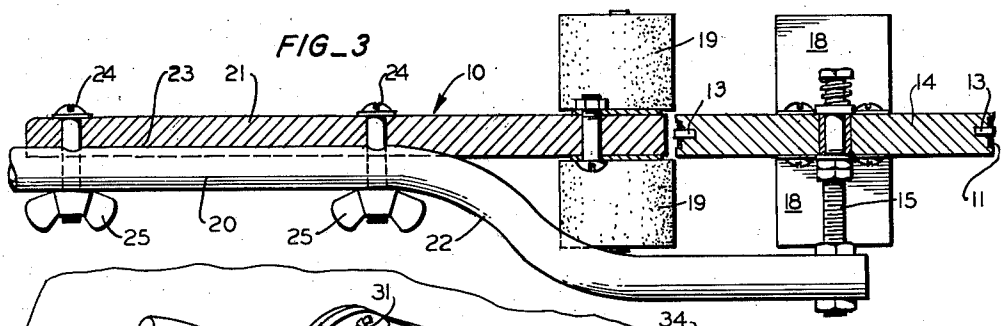
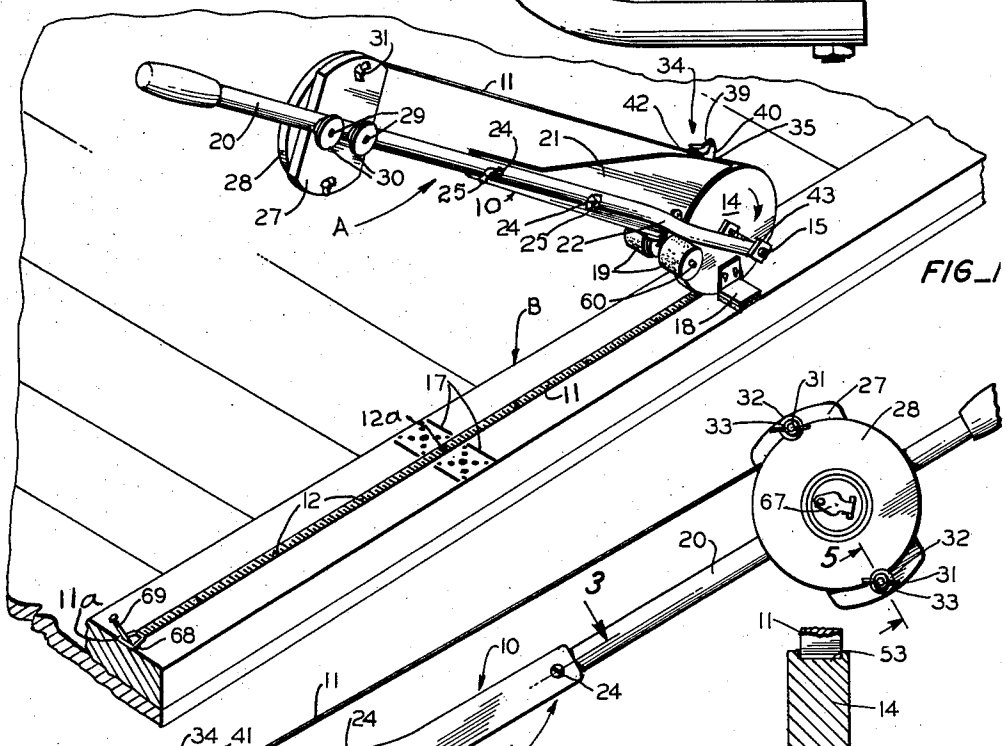
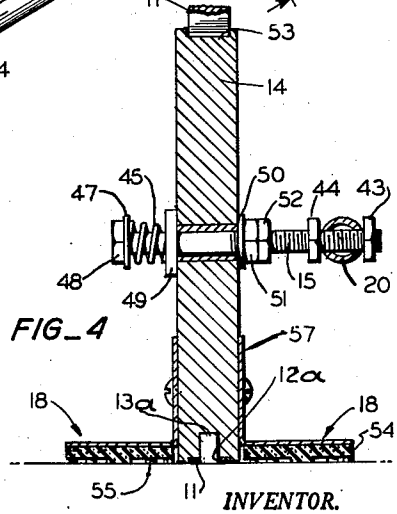
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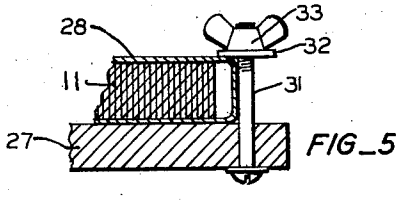
STUDDING MARKER FOR FRAME BUILDINGS

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INVENTOR.
ELWOOD L. EBERHARDT
BY
Hansen and Lane
ATTORNEYS

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STUDDING MARKER FOR FRAME BUILDINGS

Elwood L. Eberhardt, 1063 Cynthia Lane, San Jose, Calif.

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The present invention relates to a marking mechanism, and pertains more particularly to a mechanism for marking the positions of studding and other members for frame building construction.

In frame building construction it is common practice to erect studding usually on 16 inch centers, and it will be assumed that the illustrative embodiment of the invention to be described herein is arranged for marking on such centers. It will be obvious, however, to one familiar with the present disclosure, that the invention can be readily modified for marking on other centers if required.

An object of the present invention is to provide a marking instrument for marking a structural building member in exactly repeated complements, while at the same time measuring the total distance marked from a selected starting point to a selected one of the markings provided by such implement.

The invention also provides an improved marking implement for stamping on a structural member successive, equally spaced markings, while at the same time positively feeding a measuring tape from a selected first to a selected one of the markings applied by such implement.

A further object of the invention is to provide an improved marking and measuring mechanism.

These, and other objects and advantages of the invention, will be apparent from the following description and accompanying drawings, wherein:

FIG. 1 is a perspective view of an illustrative embodiment of the invention, shown in use on a fragment of a frame building floor structure.

FIG. 2 is an enlarged, side, elevational view of the marking implement illustrated in FIG. 1, a portion of a handle being broken away.

FIG. 3 is an enlarged, fragmentary, sectional view taken along line 3—3 of FIG. 2.

FIG. 4 is a further enlarged sectional view taken along line 4—4 of FIG. 2.

FIG. 5 is a similarly enlarged fragmentary sectional view taken along line 5—5 of FIG. 2.

Briefly, the illustrated embodiment A of the invention comprises a handle 10 having a measuring tape 11 mounted thereon. The measuring tape 11 preferably is of steel, and is perforated at equally spaced intervals by holes 12, which are adapted to be engaged by pins 13 mounted at similarly spaced circumferential distances around the rim of a guide and marking wheel 14. The latter is journaled on an axle bolt 15 secured to the lower end of the handle 10. The circumference of the illustrated wheel 14 is equal to the desired center-to-center distance between successive markings 17 to be imprinted on a structural building member, such as the sill B shown in FIGS. 1 and 2.

A pair of identical marking pads 18 are mounted in lateral alignment on the wheel 14, for rotation therewith. Upon each successive revolution of the wheel 14, the marking pads are first inked by passing across a pair of inking rollers 19, mounted on the handle 10, and then imprint their markings 17 on a member, such as the sill B, along which the wheel is being rolled.

Referring to the drawings in greater detail, the handle 10 of the illustrated embodiment A of the invention comprises a tubular portion 20 which may be of steel or aluminum, and a frame member 21 secured thereto. The handle tube 20 is formed with a lateral offset 22 therein sufficient to clear the printing pad 18 mounted on the

wheel 14 in the orbit of said pad around the wheel axle 15. The frame member 21, which may be of wood, has a groove 23 (FIG. 3) therein for receiving the handle tube 20 in fitted relation therein, and is removably secured to the tube by a pair of machine screws 24 provided with wing nuts 25.

A tape support plate 27, which also may be of wood, is of larger diameter than the housing 28 of the measuring tape 11. A pair of machine screws 29 are inserted through aligned holes provided therefor in the tape support plate 27 and the handle tube 20, and a pair of thumb screws (FIG. 1) 30, screwed onto these screws, removably secure the plate 27 to the handle tube. A pair of machine screws 31 also are inserted through holes provided therefor in the tape support plate 27 to be radially beyond the tape housing 28 when the latter is mounted thereon. Each of the latter screws has a washer 32 thereon (FIG. 5) which overlies, and is pressed into gripping relation with, the tape housing 28 by a wing nut 33 screwed onto its respective machine screw 31. The measuring tape 11, except for the holes 12 therein, may be of a conventional type, such as, for example a usual 50 or 100 foot steel tape, with units of measure, such as feet, inches and frictions thereof marked thereon in a well known manner.

A releasable friction clamp 34 for engaging the tape 11 comprises a U-shaped spring portion 35 with a felt wiping pad 37 adhesively secured to the inner side of each of its jaws 38. A cam lever 39 is journaled between a pair of upright side members 40 formed integrally with the lower jaw portion of the U-shaped spring 35. The bight 41 of the U-shaped spring 35 is substantially wider than the tape 11, and a hole 42 (FIG. 1) is provided in said bight 41 through which the tape 11 may be inserted. When the cam lever 39 is in its broken line position of FIG. 2, the spring jaws 38 are thereby released for separation, thereby freeing the tape 11 for threading the latter through, or removing it from, the clamp 34. When the cam lever 39 is in its solid line position of FIG. 2, the tape 11 is resiliently gripped between the felt-padded spring jaws 38 of the U-shaped member 35, to thereby frictionally grip the tape.

The support and measuring wheel 14 is journaled on the shank of the axle bolt 15, the latter being fitted into a hole provided therefor in the lower end of the handle tube 20. The wheel has a circumference equal to the desired spacing between adjacent markings 17 to be imprinted on a structural member B.

The axle bolt 15 is secured in axially adjusted position in the handle tube 20 by nuts 43 and 44, which are screwed onto the bolt 15 and which grip the handle tube 20 firmly therebetween. A coil compression spring 45 encircles the shank of the axle bolt 15, and is held in compression between a first washer 47 mounted on the inner side of the head 48 of the bolt 15, and a second washer 49, which rides against the side of the wheel 14. A third washer 50 engages the opposite side of the wheel 14 from the second washer 49, and is retained in adjusted position on the bolt 15 by a nut 51 and lock nut 52 screwed onto the bolt 15. The compression spring 45 urges the second and third washers 49 and 50 into frictional engagement with the sides of the wheel 14, and thus prevents it from rotating freely. This frictional engagement of the wheel 14 by the washers 49 and 50, and the frictional engagement of the tape 11 by the clamp 34, prevent the usual springiness of the steel tape 11 from throwing it off the wheel 14 when released.

A peripheral groove 53 is provided in the wheel 14 of approximately the same width and depth as the respective width and thickness of the tape 11, so that the latter will ride substantially flush in this groove. The

tape engaging pins **13** are mounted at equally spaced intervals around the periphery of the wheel **14**, and project radially, substantially centrally of the groove **53** therein. These pins **13** are of a diameter to fit into the holes **12** provided throughout the length of the tape **11**, as illustrated, and are spaced circumferentially around the wheel apart by the same distance as that between adjacent holes **12** in the tape.

Assuming that the markings **17** are to be made on 16 inch centers, the illustrated tape holes **12** would then be located on four inch centers, and thus four holes **12** will be provided in the tape for each 16 inches of tape length. Four pins **13** also, in such instance, would be spaced four inches apart circumferentially of the wheel **14**.

In order to insure that the first mark **17** from the free end **11***a* (FIG. 1) of the tape is a required unit distance from said tape end, it is preferred that one of the pins **13**, for example the pin **13***a* in FIG. 4, be of larger diameter than the other pins **13**, and that one hole, for example the hole **12***a* (FIG. 1) of each successive series thereof be of corresponding diameter. Thus, the larger holes **12***a* in the tape will receive the pins **11***a* in fitted relation therein, while the smaller holes **12** will receive only the smaller pins **13** therein. By so spacing the holes **12** and **12***a* along the tape **11** that the pins **13** and **13***a* will enter respectively the holes **12** and **12***a* upon rotation of the wheel **14**, the marks **17** will be applied to a member B to be marked at successive unit distances from the free end of the tape.

The marking pads **18** preferably are provided one on each side of the wheel **14** and in lateral alignment with each other. Each pad **18** comprises a layer **54** of easily compressible, resilient material, such as sponge rubber and a suitable type face member **55** secured to the radially outward face thereof. The type face member **55** may be of rubber or other suitable material to provide a suitable marking, such as the marking **17**, on a structural member B when the instrument A is used as illustrated in FIGS. 1 and 2. Each marking pad **18** is secured to the radially outward face of one of a pair of similar angle members **57**. Each angle member **57** is of suitable stiff, strong material, such as semi-spring steel, and is provided with a pair of slotted mounting holes **58** therein. Each of the mounting holes **58** receives a screw **59**, which is screwed into the wheel **14** to secure the angle members **57** thereto in radially adjusted position. The marking pads **18** are adjusted so that in the uncompressed condition of their sponge rubber base pads **54**, the outer faces of the type face members **55** project slightly beyond the periphery of the wheel **14**, but are compressed into alignment therewith during a marking operation so as to imprint a mark **17** onto a supporting structural member B for each rotation of the wheel **14** as the latter is rolled along such structural member.

The inking rollers **19** may each comprise a central core member **19***a*, which may be of wood, plastic or other suitable material. Each roller core **19***a* is journaled on a roller support pin **60**, fitted into holes provided therefor in a pair of identical swinging support plates **61**, which may be of sheet metal. The other ends of the swinging support plates **61** are pivotally mounted on a through bolt **62** which is inserted through a hole provided therefor in the handle frame member **21**.

An arched leaf spring **63** is secured by a screw **64** to the under side of the handle frame member **21** and resiliently bears against the roller pivot pin **60** to urge the latter, the swinging support plates **61** in which said pivot pin is mounted, and the inking rollers **19** journaled on said pivot pin, toward the marking pads **18** as the latter orbit around the wheel axle bolt **15**.

An ink absorbing covering layer **19***b* of suitable material, such as, felt or foam rubber is adhered to each of the inking rollers **19**, and a suitable ink, such as, for example, conventional stamp pad ink, may be applied to this covering material.

It has been found that a single inking of the inking rollers **19** is adequate for applying a large number of the markings **17**. It is preferred, therefore, for the purposes of simplicity, not to provide automatic inking facilities for the rollers **19**. However, if such automatic inking facilities are desired, then it may be supplied by the use of a conventional ink reservoir and doctor rollers of a well known type, which automatic inking facilities may be readily added by anyone ordinarily skilled in the art.

In using the present invention, the tape housing **28** is mounted on the tape support plate **27** by releasing the two wing nuts **33**, inserting the tape housing **28** beneath the washers **32** and tightening the wing nuts **33** to clamp the tape housing firmly onto the support plate **27**. In mounting the tape housing **28** on the support plate **27** it is obvious that the usual winding handle **67** for the tape should be mounted on the outside, so as to be available for rewinding the tape when necessary.

The tape **11** is threaded through the hole **42** of the spring **35**, and between the spring jaws **38** thereof with the cam lever **39** in its releasing, broken line position of FIG. 2. The cam lever **39** is then swung to its solid line position of FIGS. 1 and 2 to thereby resiliently grip the tape **11** between the felt clamp pads **37**. The tape **11** is then carried around the wheel **14**, inserting the pins **13** in appropriate holes **12** provided therefor in the tape **11**. The usual end loop **68** of the tape **11** may then be anchored in a desired starting position on a structural member B to be marked as by means of a nail **69** driven into the structural member B.

The implement A is then moved along the structural member B as shown in FIG. 1, applying downward pressure on the wheel **14** if desired. Upon each rotation of the wheel **14** the marking pads **18** will first pass across the inking rollers **19** to be inked, and will then imprint the desired markings **17** on the structural member B. This cycle may be repeated as often as desired throughout the length of the tape **11**. The distance of any selected imprinted marking **17** from the end loop **68** of the tape may be accurately determined by a direct reading on the tape at any such marking throughout the portion of the tape lying along the structural member B.

The invention provides a simple and sturdy implement for accurately marking the centers along a structural member, and one which provides for positive driven rotation of the wheel upon which the marking members are mounted. It also provides for a direct measurement of any of the markings from a selected initial point.

While I have illustrated and described a preferred embodiment of the present invention, it will be understood, however, that various changes and modifications may be made in the details thereof without departing from the scope of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is defined in the following claims.

1. A marking instrument for marking a structural bulding member in exactly repeated complements while at the same time measuring the total distance marked from a selected starting point to a selected one of the markings, said instrument comprising an elongated handle, a marking wheel journaled on the lower end of said handle, a marking member mounted substantially co-incident with the periphery of said wheel, a non-stretchable measuring tape positioned for passing partially around and beneath said wheel, and means for preventing relative slippage between the tape and the wheel, whereby, with a free end of the tape anchored at a selected point on a structural member, as the wheel is rolled along the structural member away from the anchored end of the tape the wheel is positively rotated by the tape to feed out a selected length of the tape and lay it along such structural member for measuring distances from the anchored end of the tape, and the marking member moves into marking engagement with the structural member upon each revolution of the wheel.

2. A marking instrument for marking a structural building member in exactly repeated complements while at the same time measuring the total distance marked from a selected starting point to a selected one of the markings, said instrument comprising an elongated handle, a marking wheel journaled on the lower end of said handle, a marking member mounted substantially co-incident with the periphery of said wheel for marking engagement with a member along which the wheel is rolled during each revolution of the wheel, a roll of non-stretchable measuring tape mounted on the handle and positioned for passing from said roll partially around and beneath said wheel, means for anchoring the free end of the tape so passed around the wheel to a structural member to be marked, and means for preventing relative slippage between the tape and the wheel, whereby with a free end of the tape anchored at a selected point on a structural member, as the wheel is rolled along the structural member away from the anchored end of the tape the wheel is positively rotated by the tape to feed out a selected length of the tape and lay it along such structural member for measuring distances from the anchored end of the tape, and the marking member moves into marking engagement with the structural member upon each revolution of the wheel.

3. A marking instrument for marking a structural building member in exactly repeated complements while at the same time measuring the total distance marked from a selected starting point to a selected one of the markings, said instrument comprising an elongated handle, a marking wheel journaled on the lower end of said handle, a marking member mounted substantially co-incident with the periphery of said wheel for marking engagement with a member along which the wheel is rolled during each revolution of the wheel, a roll of non-stretchable measuring tape mounted on the handle axially parallel to the wheel, whereby a length of tape withdrawn from said roll

is adapted to be passed partially around and beneath said wheel, said tape having a plurality of pin receiving openings therein, and pin means projecting from the periphery of said wheel and positioned to enter holes in said tape for preventing relative slippage between the tape and the wheel, whereby with a free end of the tape anchored at a selected point on a structural member, as the wheel is rolled along the structural member away from the anchored end of the tape the wheel is positively rotated by the tape to feed out a selected length of the tape, and the marking member moves into marking engagement with the structural member upon each revolution of the wheel.

4. An arrangement according to claim 3 wherein one of said pins is different from another of said pins and the holes in the tape are shaped to have selective fitted engagement with said pins, whereby, when the pins are fitted into their respective holes the marking member is in a determined marking position relative to the distance to the free end of the tape.

5. An arrangement according to claim 3 wherein the tape is rolled up within a housing, and means on the handle for releasably securing such housing to the handle, whereby the free end of such tape is adapted to be grasped for withdrawing the tape from its housing and passing the tape partially around and beneath the wheel.

6. An arrangement according to claim 5 wherein an inking roller is mounted on the handle and in the path of movement of the marking member during a rotation of the wheel.

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