(No Model.)

J. A. MORTON.

APPARATUS FOR ASSORTING STRAIGHT AND CROOKED WIRE.

No. 290,700. Patented Dec. 25, 1883.

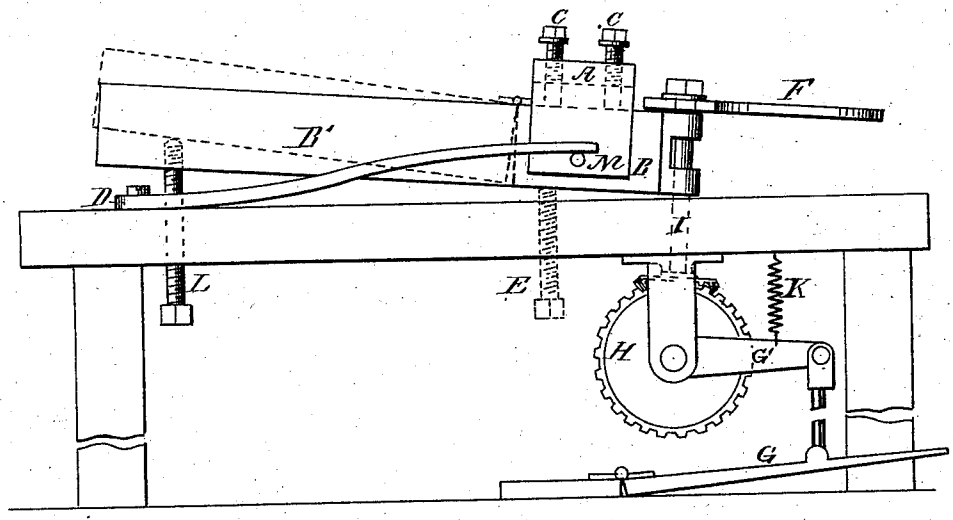


Fig. 1.

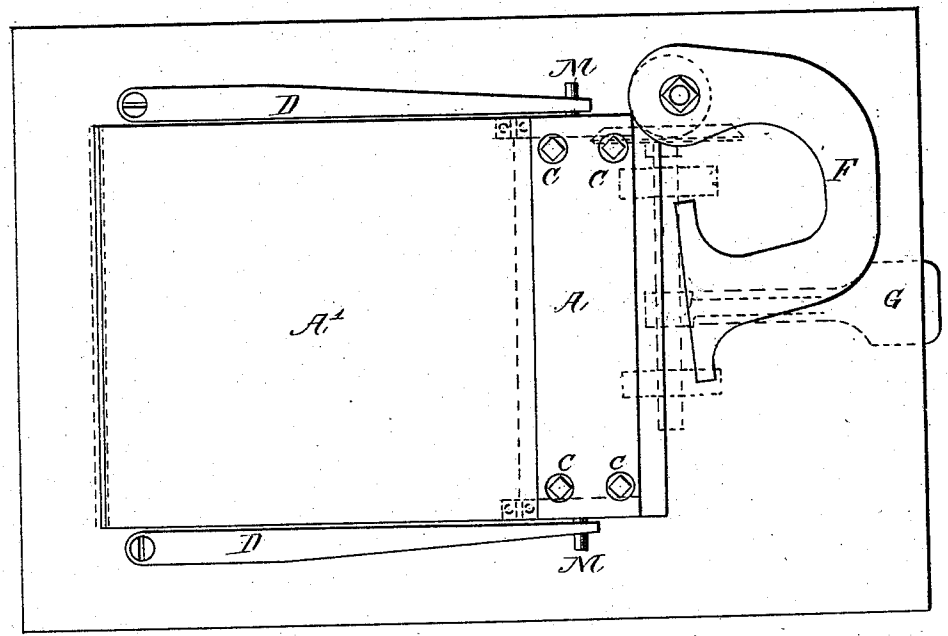


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES A. MORTON, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO THE MORSE TWIST DRILL AND MACHINE COMPANY, OF SAME PLACE.

APPARATUS FOR ASSORTING STRAIGHT AND CROOKED WIRE.

SPECIFICATION forming part of Letters Patent No. 290,700, dated December 25, 1883.

Application filed April 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. MORTON, of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Methods of and Apparatus for Sorting Straight from Crooked Wire, of which the following is a specification.

My invention relates to the sorting of wire when in lengths or pieces, such as are used for blanks for the manufacture of cutting or boring tools, so as to indicate or separate those wires or blanks which are of the required degree of straightness. Its object is to furnish a simple and accurate method of and means for accomplishing this result.

The blanks to be sorted are commonly formed from wire, and as such wire is not always accurately straight before the blanks are formed, many of them are in practice found to be too crooked for the purposes for which they are intended, especially in the case of the finer sorts of cutting-tools—like twist-drills—that are made from them. At the same time the amount of such crook is so small as to be with difficulty ascertained.

My improvement in the best form now known to me is as follows: Taking the wires or blanks to be sorted, I cause the whole convex surface of each to pass while in rotation between two parallel surfaces, the distance between which is equal to the diameter of the wire plus any such excess of distance as the wire may be allowed to diverge from absolute straightness. For example, the wire being one-eighth of an inch in diameter, the opposed parallel surfaces should be set one-eighth of an inch apart, and as much more (say one-thousandth of an inch) as is the deviation to be permitted. When the wire or blank is so caused to rotate, if it is straight, or if its amount of crook does not exceed the distance apart of the surfaces, it will show this by rotating uninterruptedly. If its amount of crook does exceed this distance, or is greater than the amount of deviation permitted, it will show this by being caught at some point of its rotation.

A simple and effective device for carrying out the method above described is shown in the accompanying drawings.

Figure 1 is a vertical section, and Fig. 2 is a plan view.

A and B are two smooth parallel plates, preferably of metal, and inclined from the horizontal. The distance apart of these plates is adjustable to the distance constituting the desired standard, as above explained, and their opposed parallel surfaces are of an extent sufficient to insure the passage between them of the whole of a wire or blank of the standard straightness, rolling for a distance at least equal to the circumference of the said wire or blank. An extension, B′, of the under plate, B, serves, if desired, as a bed on which the wire may be placed to start in its rolling into the sorter; or a special table or bed adjacent to or substantially on a level with the lower surface of the gage or detector may be used. Where the guiding table or bed and the lower plate are made in one piece, as shown in the drawings, the inclination of this bed, table, or plate may be regulated by means of a screw, L, as shown. Where the guiding table or bed is made separate from the plate, the inclination of the table or bed and of the plate may be different, if desired, separate means of giving such inclination being then required for the guiding table or bed and for the plate.

A convenient means of adjustment of the plates is by means of the gage-screws C C and the springs D D, attached to the table. Another means of adjustment, dispensing with the necessity of screws, is to separate the two plates by means of two straight pieces of wire of the standard size, placed lengthwise of the incline and at its sides, the plate B being held down by the springs D D pressing upon the pins L.

Means of regulating the amount of incline of the plates may be furnished by a special adjusting-screw, as shown at E. The pieces of wire that pass through the gage are allowed to fall into a suitable receptacle conveniently placed. To remove those pieces from the sorter that fail to pass, I provide a flat swinging arm, F, preferably of metal, actuated by means of a treadle, G, lever G′, bevel-gear H, and shaft I, and carried sharply between the sorting-plates and against the caught wire or

blank, so as to eject it from between the plates. The expelling action of this ejector may be made to cause the expelled blank to roll back and sidewise over the extension of the lower surface or other table or bed provided and fall into a convenient receptacle by its side. The rotation of the wire by its own gravity is preferred to any other source or means of rotation, because of its simplicity and sufficiency for the purposes described. It is obvious, however, that the essence of the method above described consists in causing the convex surface of the wire, while rotating in a certain plane, to pass by an opposed parallel plane, the under of the two surfaces in the device above described serving as a support to insure the rotation, and the upper surface, as the opposed parallel plane, interfering with the rotation of the crooked wire. It is also obvious that the same method might be used by causing the wire to rotate on a fixed axis or an axis in a certain plane, and passing the other surface by it while in rotation; and end-supporting of the wire by appropriate means could of course be substituted for the side support furnished by the under one of the two plates in the device shown.

Inasmuch as, by means of the adjustment of the plates A and B, wire of various sizes may be sorted with the same set of plates, the height of the ejector above the lower plate should be varied. This may be accomplished by securing the ejector to the shaft, which carries it at different heights, according to the varying gage of the machine, or by substituting a thicker ejector as the opening between the plates increases.

The return of the ejector to its place may be readily obtained by means of a spring, K, which is compressed by the ejector as it is brought up to the sorter by pressure applied to the treadle, and which operates to return the ejector to its place when the pressure is taken off.

I claim—

1. The method herein described of sorting wire, wire blanks, and kindred articles having approximately the form of a straight cylinder, by causing the convex face to rotate next an opposed surface of the character described, whereby is permitted the complete rotation only of such cylinders as are of a predetermined degree of straightness, substantially as herein set forth.

2. The method herein described of sorting wire, wire blanks, and kindred articles having approximately the form of a straight cylinder, by causing the same to pass with a rolling motion between opposed parallel plates of the character described for a distance equal at least to the circumference of said cylinder, substantially as herein set forth.

3. In a device for sorting wire blanks and kindred articles having approximately the form of a straight cylinder, the combination of two (2) opposed parallel surfaces whose lateral extent is equal to the length of the cylinder to be tested, the said surfaces being rigidly held at such an interval apart as by their frictional resistance to prevent or check the rotation between them of any cylinder having more than a permitted degree of crook, all substantially as herein described and set forth, and for the purposes herein specified.

4. In a device for the purpose described, the combination of two opposed parallel surfaces of the character described, said surfaces being inclined from the horizontal, for the purpose set forth.

5. In a device for the purposes described, the combination of two opposed parallel surfaces, one of which has a lateral extension beyond the other, serving as a table or bed, of the character and for the purpose set forth.

6. In a device for the purposes described, the combination, with two opposed parallel surfaces, of a table or bed adjoining the lower one of said surfaces, as set forth.

7. In a device for the purposes described, the combination of two opposed parallel inclined surfaces, one of which has a lateral extension beyond the other, serving as a table or bed of the character and for the purpose described.

8. In a device for the purposes described, the combination, with two opposed parallel surfaces of the character described, of means, substantially as set forth, for ejecting the detained or crooked wire cylinders.

9. In a device for the purposes described, the combination, with two opposed parallel inclined surfaces of the character described, of means, substantially as set forth, for ejecting the detained or crooked cylinders.

10. In a device for the purposes described, the combination, with two opposed parallel surfaces, the lower of which has a lateral extension of the character described, of means, substantially as set forth, for ejecting a detained or crooked cylinder.

11. In a device for the purposes described, the combination, with two opposed parallel surfaces whose lateral extent is equal to the length of the cylinder to be tested, of means, substantially as set forth, for adjusting and rigidly holding the said surfaces at the required distance apart, all substantially as and for the purposes herein specified.

12. In a device for the purposes described, the combination, with two opposed parallel inclined surfaces of the character described, of means, substantially as set forth, for adjusting the interval between said surfaces, for the purpose specified.

13. In a device for the purposes described, the combination, with two opposed parallel surfaces, of a table or bed adjoining the lower of said surfaces, and means for raising and lowering said table or bed.

14. In a device for the purposes described, the combination, with two opposed parallel surfaces, of means for varying the incline of

said surfaces to the horizontal, substantially as described.

15. In combination with the opposed parallel surfaces A B, having a lateral extent not less than the length of the cylinder to be tested and a longitudinal extent not less than the circumference of the said cylinder, the gage-screws C C and springs D D, whereby the two surfaces may be set and held rigidly at the desired distance apart, all substantially as herein set forth, and for the purposes herein described.

16. In combination, the treadle G, lever G′, gears H, shaft I, and ejector F, as described.

17. In combination, the treadle G, lever G′, gears H, shaft I, ejector F, and return-spring K, as described.

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Witnesses:
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