

B. M. W. HANSON.

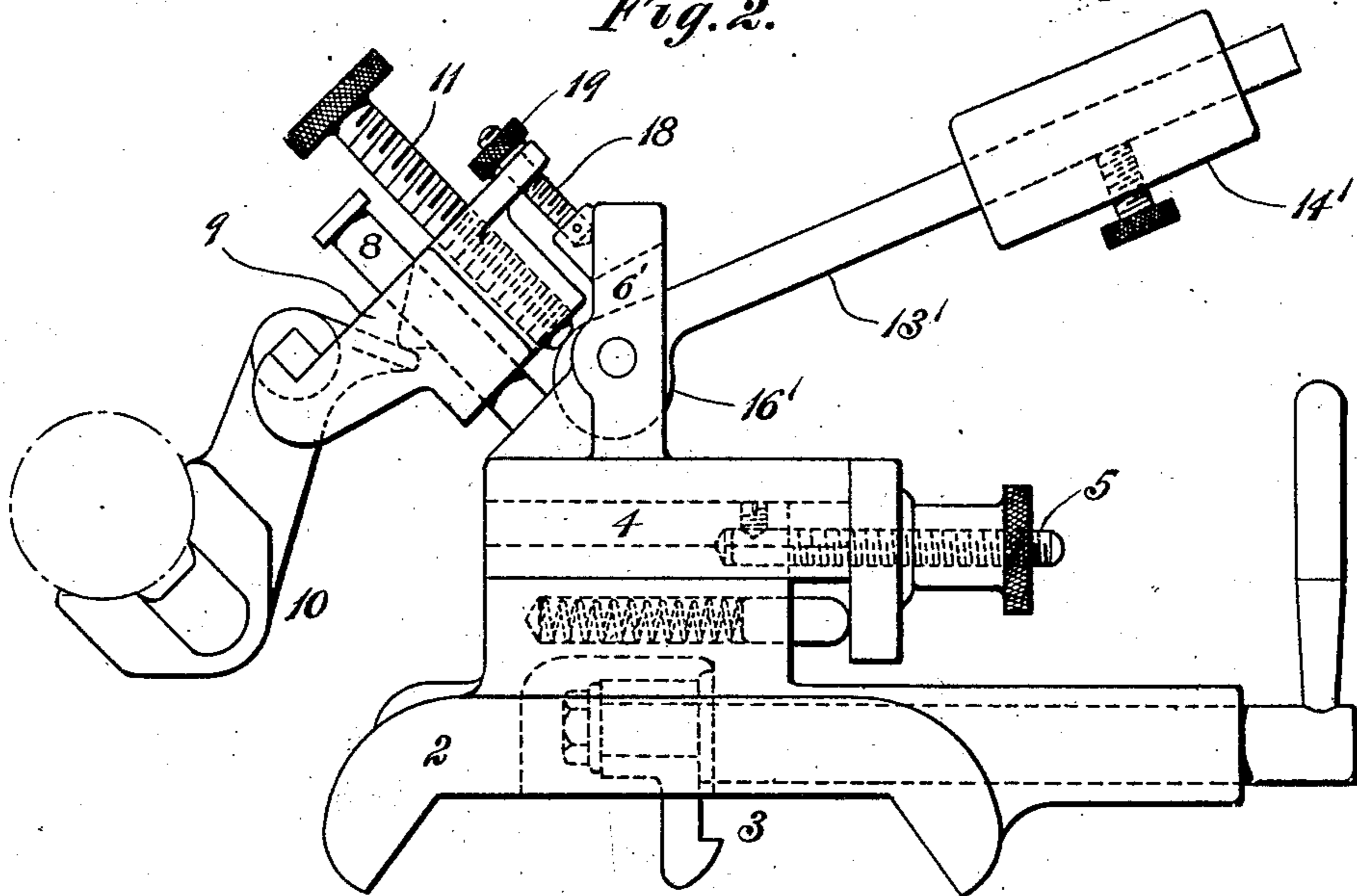
STEADY REST.

APPLICATION FILED MAR. 23, 1908.

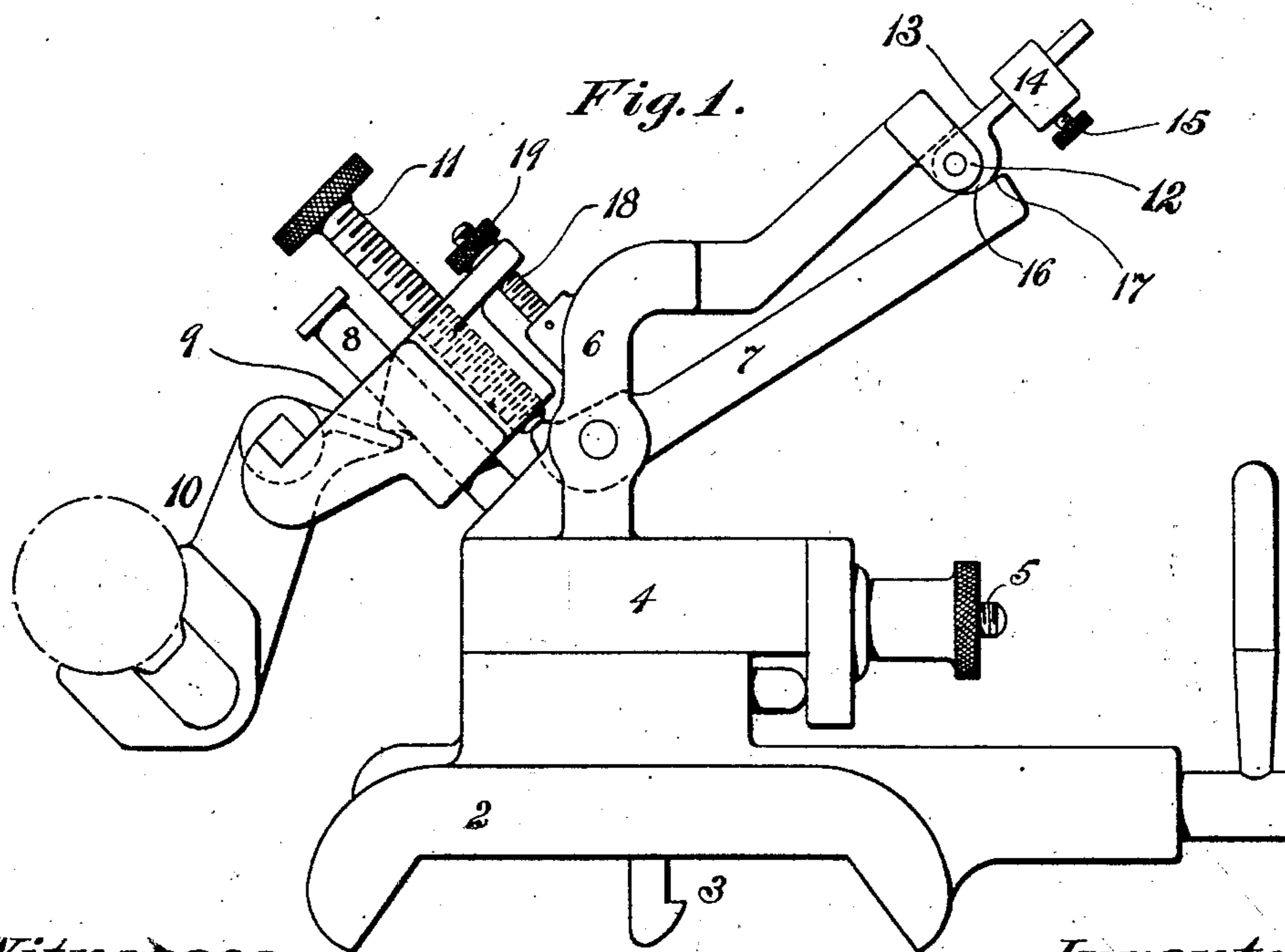
915,175.

Patented Mar. 16, 1909.

*Fig. 2.*



*Fig. 1.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

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## STEADY-REST.

No. 915,175.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed March 23, 1908. Serial No. 422,805.

*To all whom it may concern:*

Be it known that I, BENGT M. W. HANSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Steady-Rests, of which the following is a specification.

This invention relates to steady rests.

10 A steady rest comprising my invention is susceptible of advantageous use in many different connections. As an illustration I might mention that it can be employed with utility in conjunction with a metal-reducing machine. An apparatus of the latter type 15 comprehends work-supporting means and the steady-rest can be employed for holding the work in a firm, substantial manner during the reduction in diameter of the work or stock of whatever nature it may be.

20 One of the important features of the invention is in the provision of simple and effective means for advancing the steady rest in an unyielding manner as the work is reduced or following any other like function, the work being at all times or during the grinding or other operation maintained against lateral motion bodily.

30 In the drawings accompanying and forming part of this specification I have shown in detail certain forms of embodiment of the invention which to enable those skilled in the art to practice the same will be set forth in detail in the following description while the novelty of the invention will be included in the claims succeeding said description.

Referring to said drawings, Figure 1 is a side elevation of a work rest and its associated means involving my invention, and Fig. 40 2 is a similar view of another form of the same.

Referring first to Fig. 1. The numeral 2 denotes a slide which may be mounted for movement longitudinally of the bed of a metal-reducing machine. In practice this 45 slide 2 has means cooperative therewith for clamping the same in an adjusted position on said bed, which as will be understood is not shown. Said clamping means, however, is illustrated, being designated in a general way by 3. The slide 2 is represented as supporting a slide as 4 which moves transversely of the companion slide and also of said bed; its adjustment may be effected by a nut on a

screw as 5. I have described briefly two 55 slides which are common in certain classes of metal reducing machines. It will be obvious that I may use my improvements with these slides or in any other way that they can be. On the upper slide 4, there is a 60 standard or post as 6 which constitutes a convenient support for a lever as 7, the latter being represented as so pivoted to the standard or post as to present a short inner arm and a long outer arm. The upper por- 65 tion of the standard or post is illustrated as projected outward and upward for a purpose that will hereinafter appear, and the function of said lever will be also referred to hereinafter. The slide 4 has one or more guide 70 projections or pins as 8 which are represented as standing at an upward and inward angle, and said pin or pins cooperate with the block 9 which is perforated for the passage of said pin or pins the latter being rigidly 75 connected in some suitable manner with said slide 4. It will be clear therefore that the block 9 has an upward and inward angular path. Said block constitutes a simple carrier for a steady-rest such as that de- 80 noted in a general way by 10, the steady rest and its carrier being ordinarily separably connected and the steady-rest being preferably rigidly mounted upon said carrier. This, however, does not concern the 85 present invention nor is it necessary that I employ a steady-rest and carrier of any particular form, the invention residing in the means for advancing the steady-rest as the diameter of the stock or work is reduced, 90 assuming that said steady-rest be employed in a grinding-machine. I should also state that the steady rest is so related with the work that the grinding tool can traverse the work for its entire length if necessary and 95 can also operate on the work opposite the steady rest which would not be the case were the work surrounded by a holding device or similar means.

I have illustrated as tapped through the 100 carrier or block 9, a screw 11, constituting a simple form of adjustable stop the inner end of the screw being engageable by the lever 7. It will be apparent that when the long arm of said lever is swung downward, the short arm 105 thereof will be raised, and said short arm being in contact with the tip or inner end of the screw 11, the movement of the carrier or

block 9 and the steady rest 10 will follow, the two latter parts following a diagonal path. In practice the steady rest is shaped to receive the work. When the lever is operated in the manner indicated the steady rest through the intervening parts will be caused to follow up the work and the operating means for said lever cause the steady rest to bear at all times solidly or unyieldingly against the work.

As one feature of the invention I combine with a steady rest, means involving an automatically-operative cam, for unyieldingly and preferably bodily advancing said steady rest and along what is in the present case a straight path. If desired the same may operate against the lever 7. There are other ways of obtaining the cam action and one of them will be hereinafter described. So also the cam may be operated in any suitable way; certainty of action, however, can be secured by the use of a weight.

Referring to Fig. 1 it will be seen that the outer end of the support 6 has a bearing as 12 for the cam-lever 13, the active face of the cam-portion of said lever being preferably exterior thereof and directly coöperative with the long outer arm of the lever 7. The cam-lever 13 is provided with an adjustable weight as 14, which may be held in a desired adjusted position by a set-screw as 15 tapped through the weight and engaging the cam-lever 13. Said cam lever exercises a constant downward thrust on the long outer arm of the lever 7 whereby the action hereinbefore described can be accomplished.

I prefer to so mount the cam-lever 13 that the distance between the point engaged by the active portion of the cam 16 and the axis of motion of said cam-lever is so very much less than that between said axis and the place at which the operating power or weight is applied to said cam-lever, that it is practically impossible to cause a backward movement of said cam-lever by force applied thereto at any point between its axis and the work. If desired the axially-movable cam may be located in a cut-away portion 17 in the extreme outer end of the lever 7.

I may if desired and as shown, pivotally connect to the standard 6 the lower end of a screw as 18, said screw extending upward and inward at an angle and through a hole or perforation in the carrier or block 9, and having a nut as 19 constituting a limiting stop for the said block or carrier. The stroke of the block or carrier 9 can be regulated by the adjustment of the screw 11 and when the advancing movement of said carrier is completed it will abut against the nut 19.

If desired and as illustrated in Fig. 2 the cam need not act against a lever such as 7 shown in Fig. 1. In Fig. 2 the cam acts directly against the block or carrier 9 or against an element such as the screw 11 forming a part of the same. With these excep-

tions all the parts appearing in Fig. 1 are reproduced in Fig. 2 for which reason corresponding characters will be applied to the duplicated parts. The cam-lever 13' is shown as pivotally supported by the standard 6', its cam 16' acting against the inner end of the screw 11 precisely as hereinbefore described. The cam-lever 13' has an adjustable weight 14'. Said cam-lever 13' is so mounted as to obtain the functions hereinbefore alluded to.

Except in the particulars noted the two forms of the device are the same and in both said forms the steady-rest carrier is advanced steadily and automatically by a powerful thrust although it is unyieldingly held against backward or retractive motion.

In both forms of the cam devices the active faces thereof in addition to being as hereinbefore set forth exterior thereof are also preferably of progressively increasing radius by reason of which I can obtain the maximum effect thereof and in addition to this important feature the thrust applied to the steady-rest carrier occurs preferably at a single point and also preferably at one side of the steady-rest in view of which the grinding tool can traverse the work from end to end thereof without coming in contact with any part of the steady-rest or its adjuncts, the same applying when the work is moved longitudinally and relatively to the carrier.

What I claim is:

1. The combination of a steady-rest, a carrier for said steady-rest upon which the latter is removably, rigidly mounted, and means for automatically advancing said carrier, said means involving a cam coöperative with and for applying its effect to the carrier to unyieldingly prevent retractive movement thereof.

2. The combination of a steady-rest carrier having an adjustable stop, and means acting against said adjustable stop to automatically advance the carrier, said means involving a cam coöperative with and for applying its effect to said stop and thereby the carrier to unyieldingly prevent retractive movement thereof.

3. The combination of a steady-rest carrier, a screw adjustably carried by said carrier, and automatically-operative means acting against said screw to advance the carrier, said means involving a cam coöperative with and for applying its effect to said screw and thereby to the carrier to unyieldingly prevent retractive movement of the latter.

4. The combination of a steady-rest carrier, a guide pin fixed with respect to the carrier for causing the latter to follow a straight path, and means acting automatically against said carrier to advance the same, said means involving a cam coöperative with and for applying its effect to the

carrier to unyieldingly prevent retractive movement thereof.

5 5. The combination of a steady-rest carrier, and means for automatically advancing the same, said means involving a cam coöperative with and for applying its effect to the carrier for unyieldingly preventing retractive movement thereof and the active face of the cam being curved and of progressively-increasing radius.

10 6. The combination of a steady-rest carrier, an automatically operative cam, and a movable device interposed between the automatically operative cam and the carrier, for transferring the effect of the cam to the carrier to advance and unyieldingly prevent retractive movement of said carrier.

20 7. The combination of a steady-rest carrier, an automatically - operable cam, and a pivotally mounted lever supported independently of the cam and located between said cam and carrier for transferring the effect of the cam to the carrier to advance and unyieldingly prevent retractive movement thereof.

25 8. The combination of a steady-rest carrier, an automatically operative cam-lever, and a movable device interposed between said cam lever and the carrier, for transferring the effect of the cam portion of said lever to said carrier to advance and unyieldingly prevent retractive movement of the latter.

35 9. The combination of a steady-rest carrier, a lever active against the same, and a weighted cam-lever operative against the first mentioned lever and serving to actuate

the latter to advance and unyieldingly prevent retractive movement of said carrier.

40 10. The combination of a steady-rest carrier, means for automatically advancing the same, comprising a cam coöperative with and for applying its effect to said carrier to unyieldingly prevent retractive movement thereof, and means for limiting the advancing movement of said carrier.

11. The combination of a steady-rest carrier, and means for automatically advancing the same, said means involving a cam coöperative with and for applying its effect to said carrier to unyieldingly prevent retractive movement thereof, the carrier advancing effect being applied to said carrier at but a single point thereof.

50 12. The combination of a steady-rest, a carrier for said steady-rest, and means for automatically advancing said carrier by a thrust applied thereto at one side of the steady-rest said means involving a cam which acts against the carrier to unyieldingly prevent retractive movement thereof.

60 13. The combination of a steady rest adapted to engage the work and to permit the operation of a tool opposite said steady-rest, a carrier rigidly carrying said steady rest, and cam means for automatically advancing said carrier and for unyieldingly preventing retractive movement thereof.

In testimony whereof I affix my signature in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

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H. W. KILBOURNE.