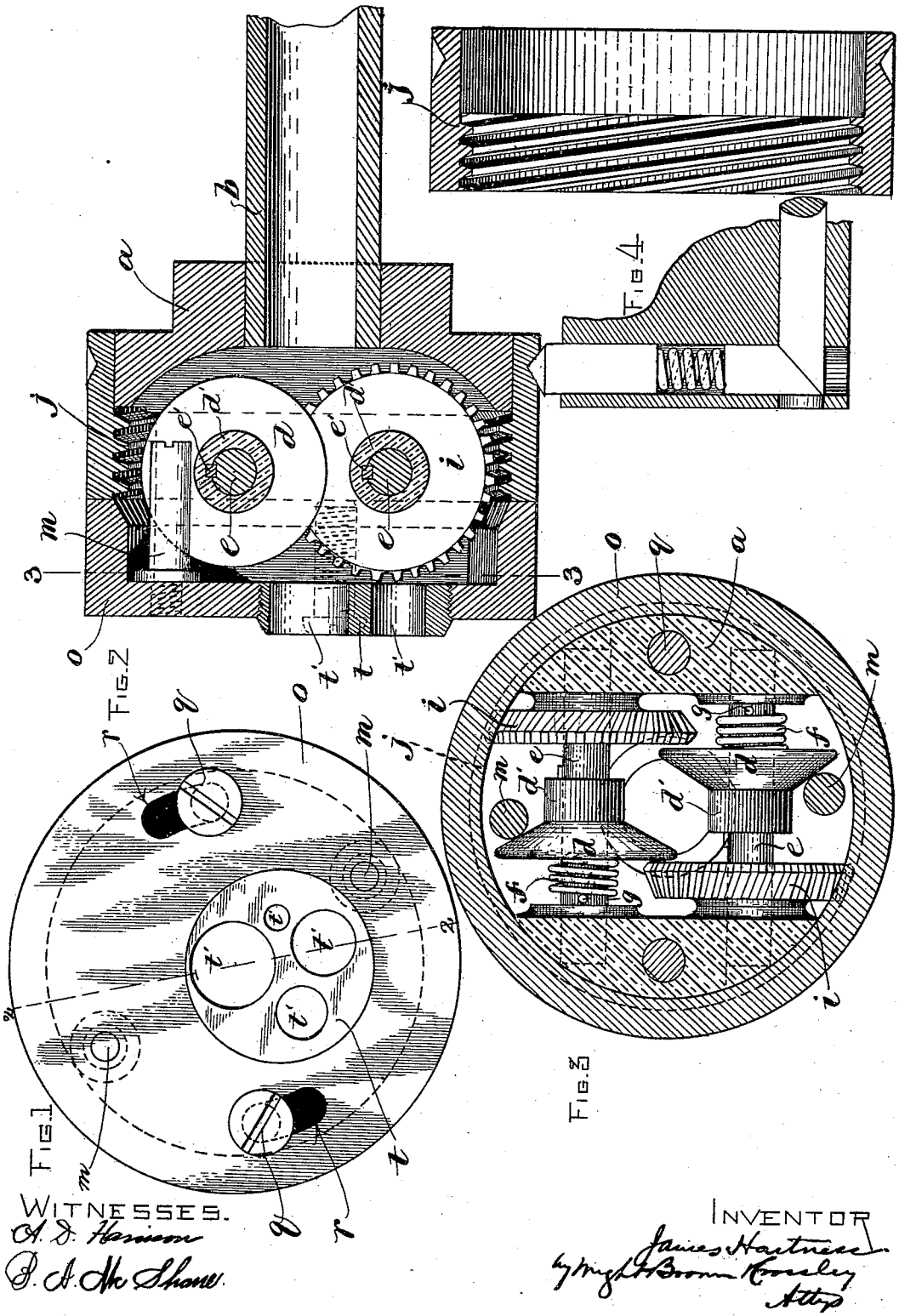
(No Model.) 2 Sheets—Sheet 1.

J. HARTNESS.

STOCK FEEDING DEVICE FOR SCREW MACHINES.

No. 467,098. Patented Jan. 12, 1892.



WITNESSES.
A. D. Harrison
P. A. McShane

INVENTOR
James Hartness
by Wright Brown Quinby & Atty

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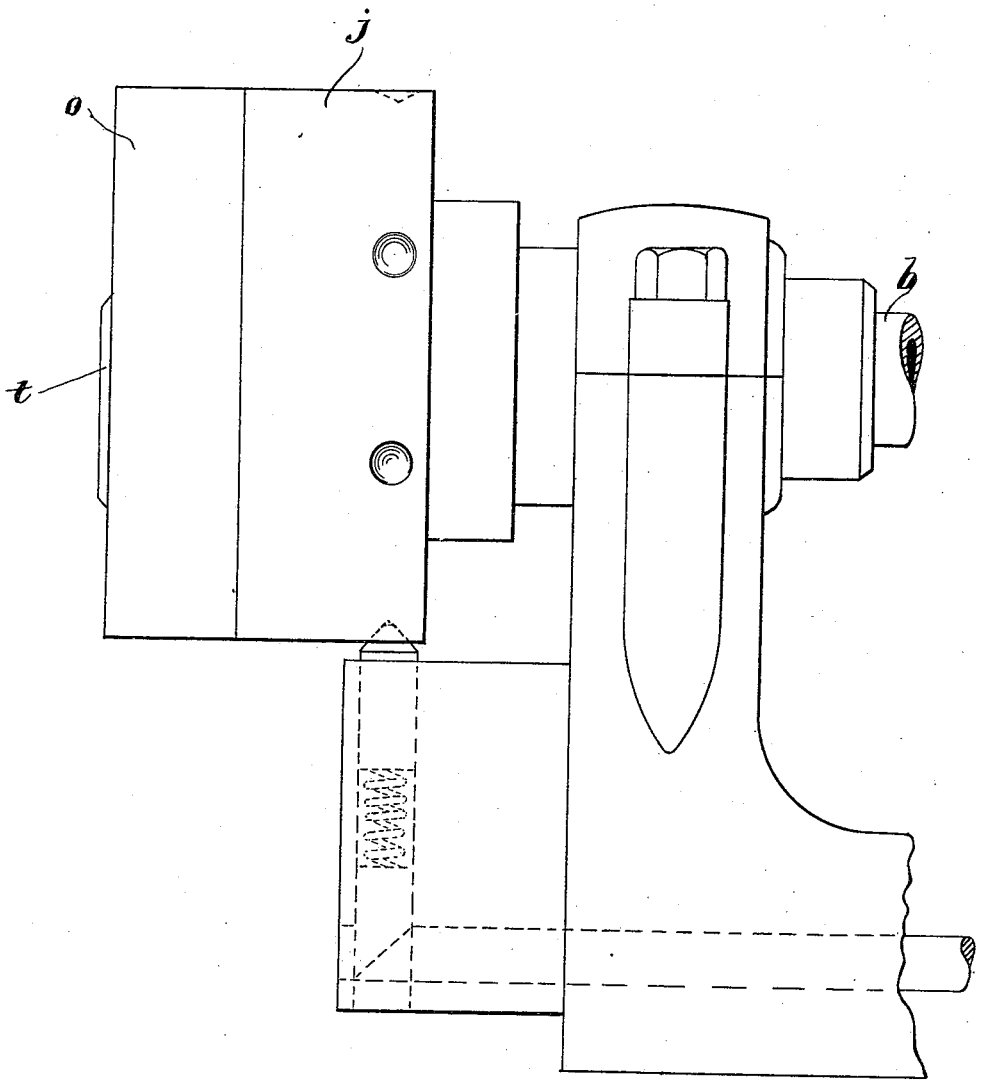
Fig. 5



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UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT, ASSIGNOR TO THE JONES & LAMSON MACHINE COMPANY, OF SAME PLACE.

STOCK-FEEDING DEVICE FOR SCREW-MACHINES.

SPECIFICATION forming part of Letters Patent No. 467,098, dated January 12, 1892.

Application filed June 12, 1891. Serial No. 395,989. (No model.)

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Stock-Feeding Devices for Screw-Machines, of which the following is a specification.

This invention relates to means for feeding rapidly-rotating bars, rods, or wires of metal through the holding-chucks of screw-machines by the use of feed-rolls which are revolved about the rotating bars, &c., and are also rotated on their own axes while revolving, as shown in my Letters Patent of the United States No. 425,377, of date April 8, 1890.

The invention has for its object, first, to provide simple, strong, and effective means for supporting the feed-rolls within the rotating head which contains them, and, secondly, to provide improved means for simultaneously rotating said rolls while they are revolving about the axis of the head.

To these ends the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front end elevation of my improved stock-feeding device. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a section on line 3 3 of Fig. 2, looking toward the right. Fig. 4 represents a sectional view of the internal worm which effects the rotation of the feed-rolls. Fig. 5 represents a side elevation of the device attached to a portion of a screw-machine.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the head or holder, which may be affixed to the tubular spindle *b* of a lathe by any suitable means.

d d represent the feed-rolls which feed the stock, or, in other words, the rod or wire from which screws or other like articles are made by the mechanism with which the machine to which my improved feeding devices are applied is provided. Each of said feed-rolls is a cone-frustum, its face being therefore tapering or conical, as shown in Fig. 3. Said feed-rolls are mounted on shafts *e e*, which are journaled in bearings formed for them in the interior of the head *a*, the engagement of the feed-rolls with the shafts being such that the feed-rolls, while necessarily rotating with the shafts, are adapted to move freely lengthwise of the shafts, said engagement being preferably effected by means of splines or feathers *e'* on the shafts and slots in the hubs *d'* of the rolls receiving said splines or feathers. The object of the described engagement of the rolls with their shafts is to enable the rolls to move laterally for the purpose of grasping and releasing the stock. The conical face of each roll is normally pressed toward the center of the head or casing *a*, at which point the stock is located, by means of a spring *f*, preferably of helical form, and interposed between a stud *g*, affixed to the shaft and to the outer side of the feed-roll on said shaft.

The shafts *e e* and the feed-rolls *d d* thereon are rotated by means of worm-gears *i i*, affixed to said shafts, and an internal worm *j*, mounted to rotate on the head or casing *a*, said worm meshing with the worm-gears *i i*. When the head is rotated and the worm *j* allowed to simply rotate with the head by its frictional contact therewith, the feed-rolls *d d* are not rotated, but simply partake of the motion of the head. When, however, the worm *j* is arrested and held from rotating and the head or casing *a* is rotated, the worm imparts rotary motion to the feed-roll shafts and the feed-rolls thereon, each feed-roll being thus given a planetary motion—viz., a revolution about the center of the head—by the rotation of the latter and a rotary movement on its own axis by the connection of its shaft with the worm *j*. The internal worm may be made operative to cause the above-described rotation of the feed-rolls in any suitable way. For example, it may be prevented from rotating, when it is desired to cause the feed-rolls to operate, by means of a friction band or brake applied to the periphery of the ring which composes the internal worm in the same manner that the loose gear *m* (shown in my patent above referred to) is held to operate the feed-rolls shown in that patent. I have not illustrated said band and the devices that operate it in the present case, because the application of the devices shown in my

former patent to the annular worm g will be perfectly obvious.

To limit the movement of the feed-rolls $d\,d$ by the springs $f\,f$ toward the center of the head or casing a, I provide adjustable stops $m\,m$, which are arranged to arrest the feed-rolls and come in contact with the tapered faces thereof, as shown in Fig. 3. Said stops may be supported and adjusted in any suitable way. I have here shown the stops as composed of studs affixed to a cap o, which is secured to the head or casing a by means of bolts $q\,q$, passing through elongated segmental slots $r\,r$ in the cap and entering sockets in one end of the head or casing. Said slots r by their elongated form permit the cap to be partially rotated, and thus move the studs $m\,m$ laterally, so that they arrest the feed-rolls $d\,d$ at greater or less distances from the center of the head or casing a. The principal object of these adjustable stops is to prevent the rolls from being forced inwardly too far by the springs after the piece of stock has been entirely fed out from between the rolls.

The stock is held in a central position in the head or casing a by means of a centering-bushing t, which is inserted in an orifice in the face of the cap o, said bushing being provided with an orifice t', which, when the bushing is properly adjusted, is at the exact center of the head and is made of such size as to closely fit the stock being treated.

I have here shown the centering-bushing as provided with a series of orifices t' of different sizes, so that the same bushing may serve for a number of sizes of stock, the bushing being arranged eccentrically in the cap o and having its holes so arranged that each will be brought by the rotation of the bushing to the axial center of the head. The bushing is engaged with the cap o by a screw-thread formed on its periphery and engaging an internal thread formed in the orifice of the cap.

It will be observed that by the described construction I produce a very simple and efficient work-feeding device, the number of parts and cost of construction being reduced practically to the minimum.

It will be observed that by using the side portions or faces of the feed-rolls as the feeding-surfaces, instead of the peripheries of the rolls, as heretofore, I am enabled to cause the rolls to grasp the work simply by a lateral movement of the roll, so that it is not necessary to provide movable supports or holders for the rolls, as in devices for this purpose heretofore invented by me and shown in my patent, No. 425,377, above referred to, and in my other patent, No. 441,411, of date November 25, 1890. I do not limit myself, so far as this feature of my invention is concerned, to the conical rolls here shown, and may give the laterally-movable rolls any suitable form which will enable their faces to grasp the stock when the rolls are moved laterally.

I claim—

1. The combination of a head or holder and feed-rolls located therein, said rolls having their side surfaces or faces, instead of their peripheries, arranged to co-operate in feeding the stock, as set forth.

2. The combination of a head or holder and frusto-conical feed-rolls located therein, the tapering faces of said rolls being arranged at opposite sides of and facing the center of the head, as set forth.

3. The combination of a head or holder, laterally-movable feed-rolls located therein, said rolls having their side surfaces or faces arranged to co-operate in feeding the stock, and means for rotating said rolls simultaneously, as set forth.

4. The combination of a head or holder, laterally-movable feed-rolls located therein, said rolls having their side surfaces or faces arranged to co-operate in feeding the stock, springs arranged to move the rolls laterally toward the center of the head, and means for rotating said rolls simultaneously, as set forth.

5. The combination of a head or holder, shafts journaled therein, feed-rolls mounted on said shafts and having their faces arranged to co-operate in feeding the stock, and an internal worm mounted loosely on the head and engaged with worm-gears affixed to said shafts, as set forth.

6. The combination of a head or holder, shafts journaled therein, feed-rolls mounted on said shafts and having their faces arranged to co-operate in feeding the stock, said rolls being adapted to move laterally on the shafts, springs arranged to move the rolls laterally toward the center of the head, and an internal worm mounted loosely on the head and engaged with worm-gears affixed to said shafts, as set forth.

7. The combination of a head or holder, laterally-movable feed-rolls located therein, said rolls having their side surfaces or faces arranged to co-operate in feeding the stock, springs arranged to move the rolls laterally toward the center of the head, means for rotating said rolls simultaneously, and adjustable stops arranged to limit the movement of the rolls toward the center of the head, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of June, A. D. 1891.

JAMES HARTNESS.

Witnesses:
WALTER W. BROWN,
W. D. WOOLSON.