F. L. GORMLEY.

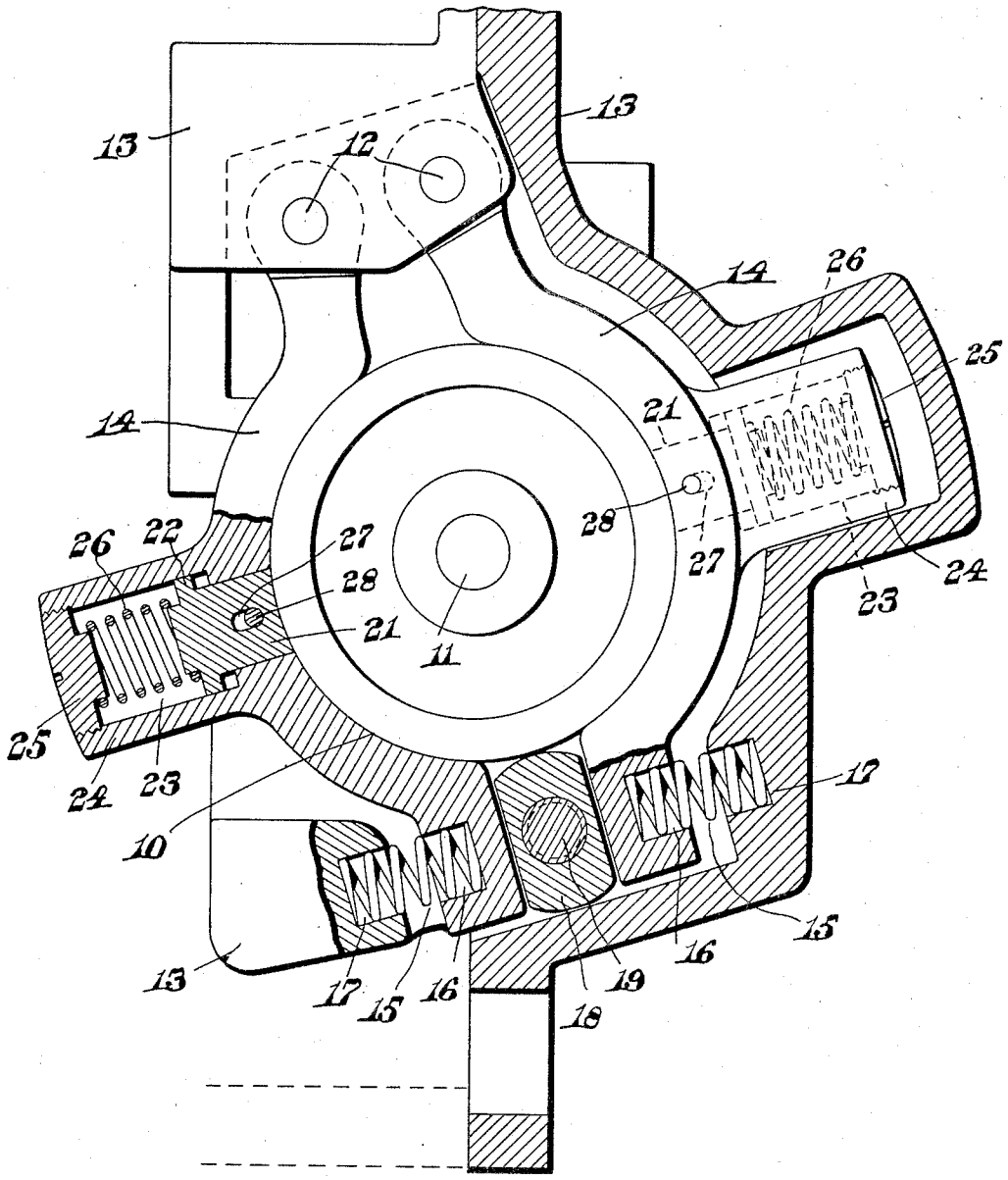
BRAKING MEANS FOR LOAD LIFTING DEVICES.

APPLICATION FILED JULY 22, 1920.

1,383,200. Patented June 28, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

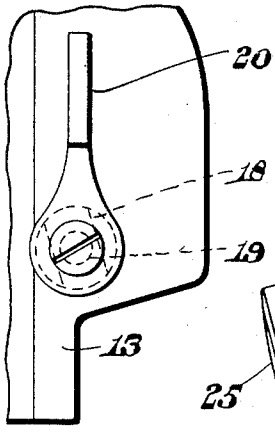


Fig. 3.

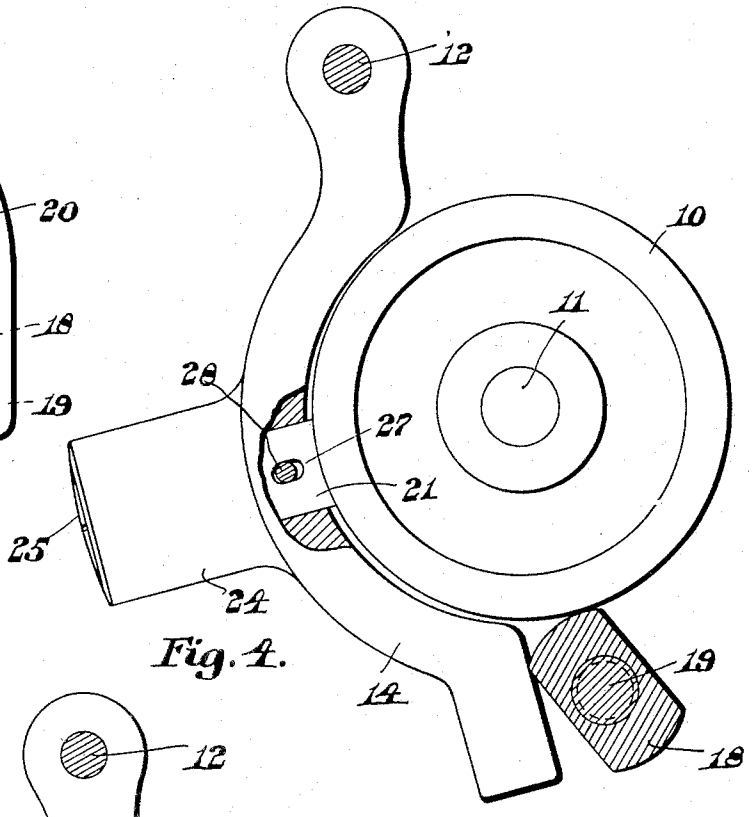
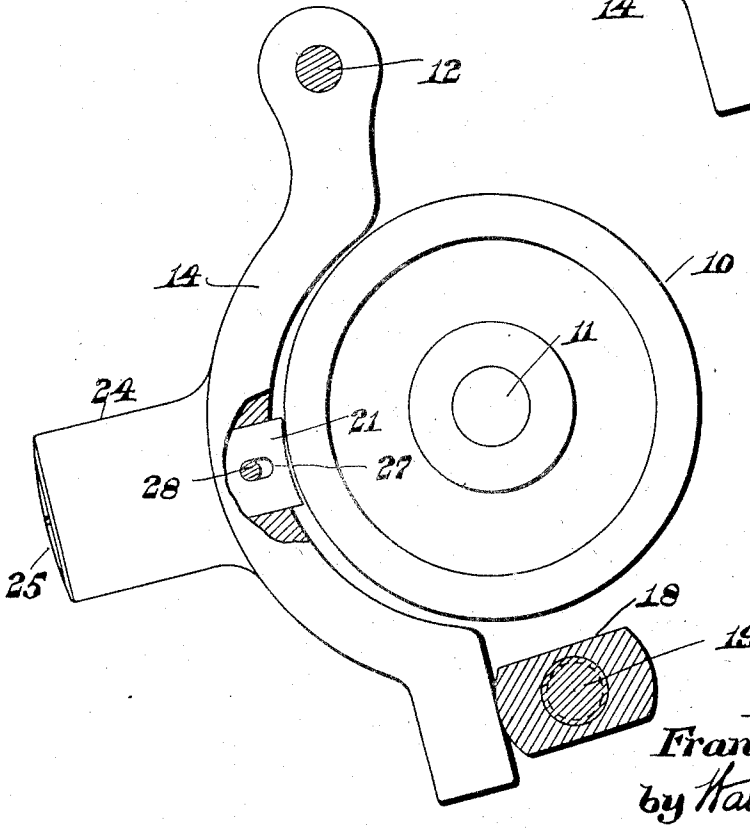


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRAKING MEANS FOR LOAD-LIFTING DEVICES.

1,383,200. Specification of Letters Patent. Patented June 28, 1921.

Application filed July 22, 1920. Serial No. 398,115.

To all whom it may concern:

Be it known that I, FRANK L. GORMLEY, a citizen of the United States of America, and a resident of Brookline, in the county of Norfolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Braking Means for Load-Lifting Devices, of which the following is a specification.

This invention relates to braking means for load lifting devices and particularly to that class of lifting devices known as high speed screw jacks adapted to run down under the load, and the object of the present invention is to provide a simple means for controlling the lowering of the load in order to prevent accidents and injury to the lifting and lowering mechanism.

The invention consists primarily of a brake wheel having coacting arms which are adapted to be removed from the wheel during the lowering operation, such removal of the arms from the brake wheel bringing into operation friction members adapted to lightly contact with said brake wheel and retard its rotation.

The invention further consists in means whereby the frictional contact of said members with said wheel may be varied as desired thereby controlling the speed of lowering of the load-supporting member.

The invention further consists of certain novel features of construction and arrangement of parts which will be understood readily by reference to the description of the drawings and to the claims to be hereinafter given.

For the purpose of illustrating the invention, one preferred form is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents an elevation partially in section of a braking means embodying the principles of the present invention.

Fig. 2 represents an elevation of the cam-operating lever.

Fig. 3 represents an elevation showing one brake arm removed from the revoluble brake wheel and the friction pad in contact with said wheel, and

Fig. 4 represents a similar view showing both the brake arm and the friction pad removed from said wheel.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a revoluble brake wheel secured to and revoluble with the shaft 11.

This shaft is preferably a worm shaft such as is shown and described in U. S. Letters-Patent No. 1,324,345 issued to me Dec. 9, 1919, and said shaft is revoluble in one direction only by the mechanism shown and described in said patent and this only during the lowering of the load.

Inasmuch as the means for rotating the worm shaft 11 forms no part of the present invention and is the same as in the above-entitled Letters-Patent, it is believed that it is unnecessary to show and describe this rotating means and the load-lifting device itself in the present application as reference may be made readily to the earlier patent for the details and operation thereof.

Pivoted at 12 to the frame 13 of the load lifting device are the brake arms 14 normally forced into engagement with the periphery of the brake wheel 10 by means of springs 15, the opposite ends of which are positioned in sockets 16 in the brake arms 14 and sockets 17 in the said frame work 13.

Between the lower ends of the brake arms 14 is disposed a flat sided cam member 18 secured to an oscillating member 19 mounted in a bearing in the frame 13 and having secured to its outer end the actuating lever 20.

This structure is substantially the same as that shown in the earlier patent of mine already referred to.

By actuating the lever 20, the cam member 18 may be turned to separate the brake arms 14 and remove them from contact with the wheel 10 so that rotary movement in one direction only may be imparted to said wheel by the worm shaft 11.

The novel features of the present inven-

tion consist in providing each brake arm 14 with a slidable friction pad 21 which will remain in contact with the wheel 10 when the brake arms are removed from contact with said wheel.

This pad 21 is provided with a head 22 positioned in a socket 23 in a boss 24 formed upon each brake arm.

The inward movement of each pad 21 is limited by the head 22 engaging the inner end of the socket 23.

The outer end of the socket 23 is closed by the adjustable cap 25 threaded thereto and between this cap 25 and the head 22 is a helical spring 26 which forces the friction pad 21 into contact with the periphery of the brake wheel 10.

The compression of the spring 26 may be adjusted by turning the cap 25 relatively to the boss 24 to which it is threaded.

The pad 21 is provided with a transverse elongated slot 27 through which extends a pin 28 secured in the brake arm 14.

This pin 28 prevents the rotation of said pad 21 in its bearing.

The springs 26 are considerably lighter than the springs 15 and tend to force the pads 21 into light frictional contact with the periphery of brake wheel 10, this light frictional contact being sufficient to retard the rotation of the wheel 10 and prevent it from rotating at an excessive speed when the load-lifting device is subjected to an excessive load and is being lowered under its own weight.

When the brake arms 14 are in the position shown in Fig. 1, the friction on the wheel 10 is sufficient to effectually lock the wheel and prevent the load from being lowered.

When it is desired to permit the self-lowering of the load, the operator actuates the lever 20 and moves the cam member 18 into the position indicated in Fig. 3 thus removing the brake arms from contact with the wheel 10 and permitting it to rotate.

As soon, however, as the brake arm 14 begins to move away from the wheel 10 the spring 26 will immediately begin to act to retain the shoe 21 in contact with said wheel thus giving said wheel no opportunity to gain a speed which might be difficult to overcome.

In other words the pads 21 are placed in commission immediately the brake arms begin to move out of commission.

The operator may continue to manipulate the actuating lever 20 and obtain any speed desired or quickly stop further rotation of the wheel 10 by returning the brake arms to the position indicated in Fig. 1.

When it is desired to lower by hand, the cam member 18 is turned into the position indicated in Fig. 4 thereby moving the brake arms 14 so far from the wheel 10 that the pads 21 will reach the limit of their inward movement and still be free from contact with the wheel 10.

This is of considerable importance as during the hand lowering it is essential that there should be absolutely no friction on the brake wheel.

By means of this simple construction the load may be effectually locked in raised position and a speed retarding mechanism placed in commission at the initial start of its self-lowering while the locking device and speed-retarding device may both be quickly placed out of commission when it is desired to lower by hand.

It is believed that the operation and many advantages of the invention will be understood readily without further description.

Having thus described my invention, I claim—

1. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; and means operable by the outward movement of said arm moving device for maintaining a friction on said brake wheel after said brake arm has been removed therefrom.

2. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; and means carried by said arm movable relatively thereto for maintaining a friction on said brake wheel after said brake arm has been removed therefrom.

3. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; and a spring-pressed friction pad carried by said arm adapted to coact with said wheel when said arm is separated therefrom.

4. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; a friction pad slidably mounted in said arm and coacting with said brake wheel; and a spring for forcing said pad toward said brake wheel.

5. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; a friction pad slidably mounted in said arm and coacting with said brake wheel; a spring for forcing said pad toward said brake wheel; and means for varying the compression of said spring.

6. A revoluble brake wheel; a brake arm coacting therewith; a device for moving said brake arm from said brake wheel; a slidable pad operable by the outward movement of said arm moving device for maintaining a friction on said brake wheel after said brake arm has been removed therefrom; and means for limiting the movement of said pad toward said brake wheel.

7. A revoluble brake wheel; oppositely dis-

posed brake arms coacting with said wheel; means for moving said arms away from said wheel; and friction pads carried by said arms and adapted to remain in contact with said wheel when said arms are removed from contact therewith.

8. A revoluble brake wheel; oppositely disposed brake arms coacting with said wheel; heavy springs for normally retaining said arms in contact with said wheel; a cam member for separating said arms from said wheel; slidable members mounted in said arms; and light springs for forcing said members into contact with the brake wheel.

9. A revoluble brake wheel; oppositely disposed pivoted brake arms coacting with said wheel; means interposed between the free ends of said arms for moving said arms away from said wheel; and friction pads carried by said arms and adapted to remain in contact with said wheel when said arms are removed from contact therewith.

10. A revoluble brake wheel; oppositely disposed brake arms coacting with said wheel; heavy springs for normally retaining said arms in contact with said wheel; slidable members mounted in said arms; and light springs for forcing said members into contact with the brake wheel.

11. A revoluble brake wheel; oppositely disposed brake arms coacting with said wheel; heavy springs for normally retaining said arms in contact with said wheel; a manually actuated cam member for separating said arms from said wheel; slidable members mounted in said arms; and light springs for forcing said members into contact with the brake wheel.

12. A revoluble brake wheel; oppositely disposed brake arms coacting with said wheel; heavy springs for normally retaining said arms in contact with said wheel; a cam member for separating said arms from said wheel; slidable members mounted in said arms; means for preventing the rotation of said slidable members; and light springs for forcing said members into contact with the brake wheel.

13. A revoluble brake wheel; brake arms coacting with said wheel; and means for creating a light friction on said wheel adapted to remain in frictional contact with said wheel when said arms are removed from said wheel.

14. A revoluble brake wheel; brake arms coacting with said wheel; and means carried by said arms for creating a light friction on said wheel and adapted to remain in frictional contact with said wheel when said arms are removed from said wheel.

15. A revoluble brake wheel; brake arms coacting with said wheel; and slidable members carried by said arms for creating a light friction on said wheel and adapted to remain in frictional contact with said wheel when said arms are removed from said wheel.

16. A revoluble member; a brake member normally coacting with said revoluble member; and a shoe slidable upon one of said members and adapted to remain in light frictional contact with the other member whenever said brake member is removed from said revoluble member.

Signed by me at 746–7 Old South Bldg., Boston, Mass., this 17th day of July, 1920.

FRANK L. GORMLEY.

Witnesses:
WALTER E. LOMPARD,
NATHAN C. LOMBARD.