April 12, 1932. J. A. HINGER 1,853,425

GUARD FOR PRESSES

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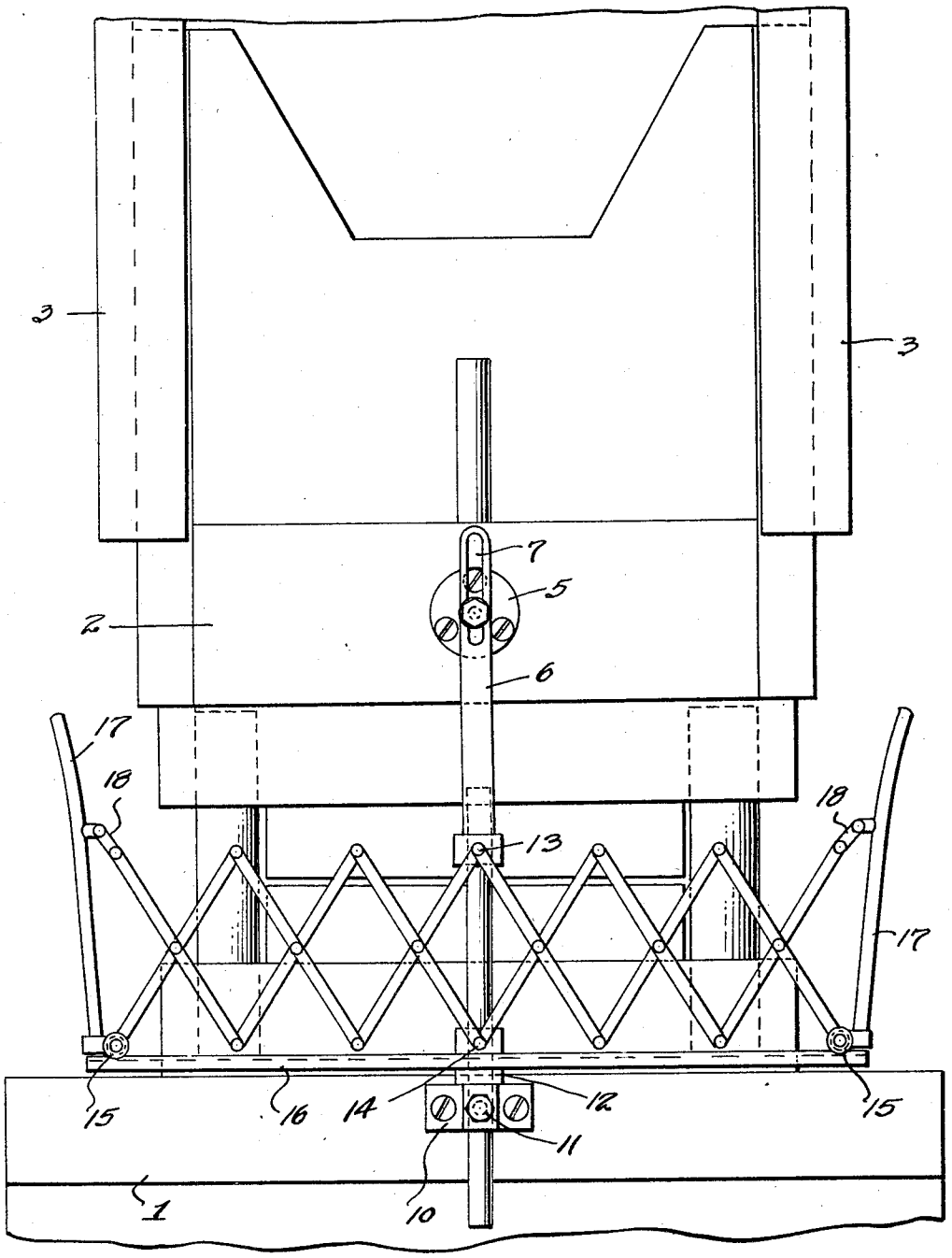

Fig. 1

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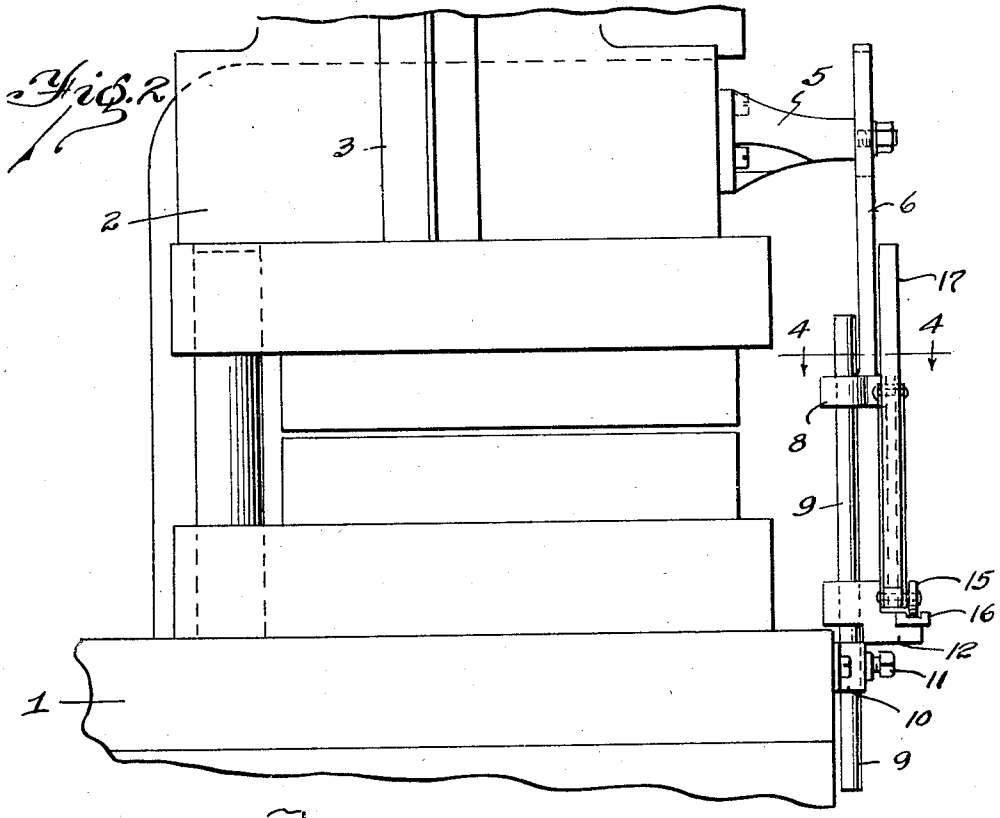
Fig. 2



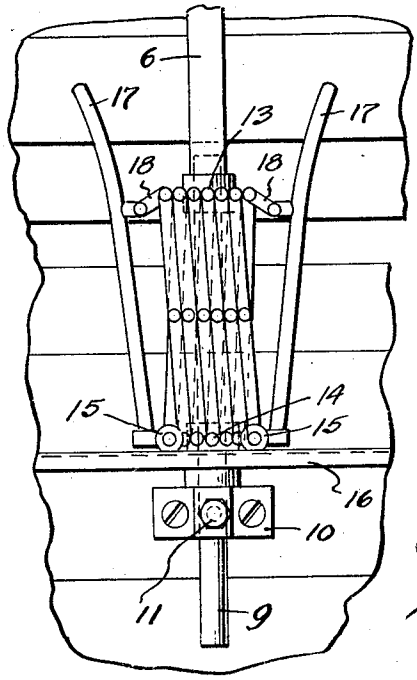


Fig. 3

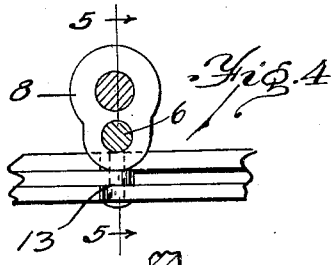


Fig. 4

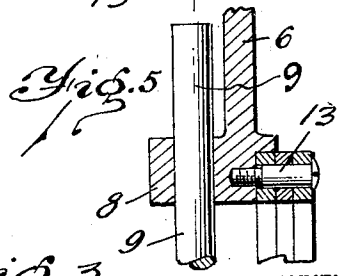


Fig. 5

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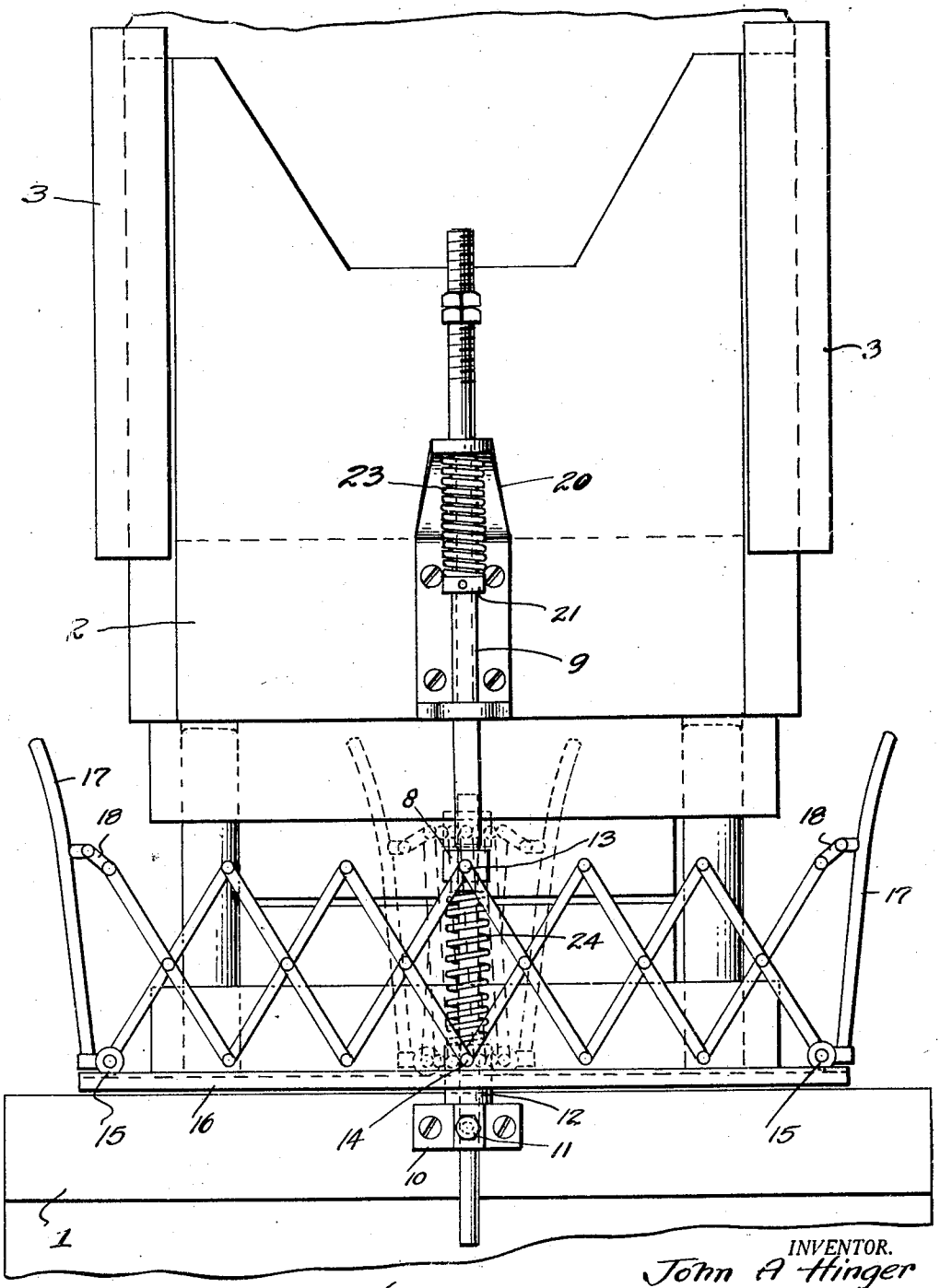

Fig. 6

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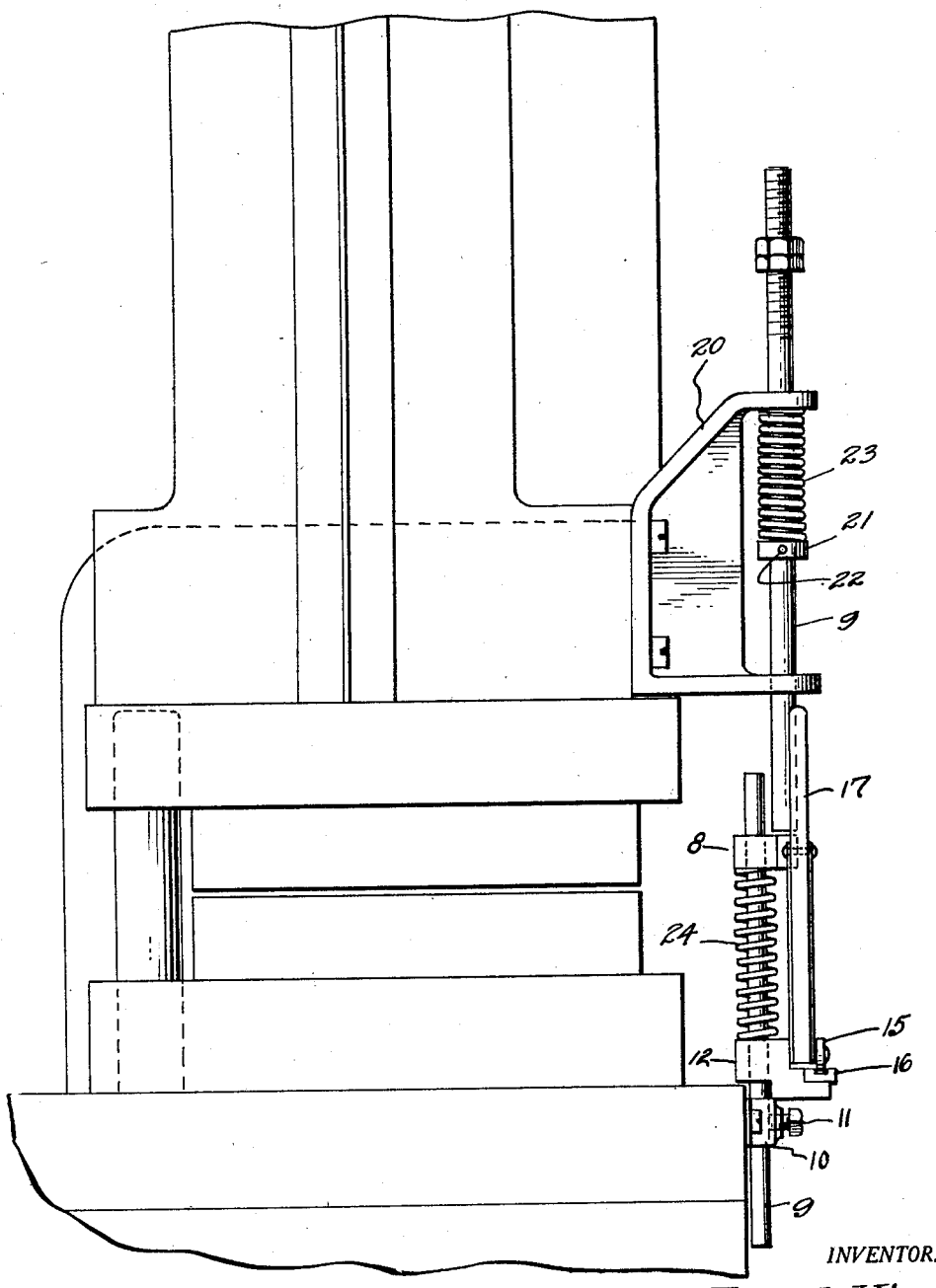

Fig. 7

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UNITED STATES PATENT OFFICE

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GUARD FOR PRESSES

Application filed September 7, 1928. Serial No. 304,459.

This invention relates to a guard for a press, and it has to do especially with a sweep guard designed to sweep the arms and hands of an operator of a punch press or the like out of the way of the press when the same is operating.

It is the object of the invention to provide an improved guard construction which will not materially interfere with the operator in working at the press and which has a relatively slow sweeping motion which will sweep the arms and hands of an operator out of the way of the press without striking the arms or hands of the operator a hard blow which would in itself incapacitate the operator. In this regard it might be mentioned that guards have been used which sweep from one side of the press to the other. The present invention contemplates a guard which moves from the central position outwardly toward both sides of the press.

In the accompanying drawings:

Fig. 1 is a front elevational view of part of the press illustrating the guard in extended position.

Fig. 2 is a side view of the same.

Fig. 3 is a front view showing part of the press and illustrating the guard in collapsed position.

Fig. 4 is a detail section taken on line 4—4 of Fig. 2.

Fig. 5 is a detail section taken on line 5—5 of Fig. 4.

Fig. 6 is a front view showing the modified form.

Fig. 7 is a side view of the mechanism of the modified form.

In the accompanying drawings a bed plate of a press is illustrated at 1, and a ram shows at 2. It will be understood that the plate and the ram are equipped with suitable dies, punches or the like, and that the ram moves vertically in guides 3. There is affixed to the ram a bracket 5 which carries an arm 6 which may be secured to the bracket by means of a bolt and an elongated slot 7 for adjustment purposes.

There is a block 8 on the lower end of the arm 6 which is in turn slidably mounted on a column or upright rod 9. This rod 9 is held fixed to the bed plate by means of a socket member 10 and set screw 11. It will thus be noted that as the ram raises or lowers the block 8 reciprocates on the rod 9.

There is a block 12 which is held stationary as regards the bed plate and this block may be carried by the rod 9, as illustrated in Fig. 2. The sweeping device of the guard consists of a lazy-tong construction with a pair of the more centrally disposed levers of the lazy-tongs pivotally connected, as at 13, to the block 8, and with a second pair of the more centrally disposed levers pivotally connected, as at 14, to block 12. Each end of the lazy-tong construction is preferably provided with a roller 15 which runs in a track 16. This track may also be supported by the block 12.

Each end of the lazy-tong construction is also provided with a device for engaging the arm of the operator, as shown at 17. There is interposed between the engaging device 17 and one of the levers of the lazy-tong construction a link 18 for accommodating variation in the height of the adjacent lever in the operation of the lazy-tong.

When the ram is raised to its uppermost position the block 8 slides up on the rod 9 thus increasing the distance between points 13 and 14 and collapsing the lazy-tongs until they assume the position shown in Fig. 3. The operator of the press works immediately in front of the collapsed lazy-tongs with one arm on each side. When the press is operated to bring the ram down, the block 8 slides down upon the rod thus extending the lazy-tong construction causing the arm engaging devices 17 to move outwardly in opposite directions from the central position to the position shown in Fig. 1. In so doing, the devices 17 engage the arms of the operator, if his arms are in the way, and pushes them out from underneath the ram. This is especially advantageous where there is an accidental repeat movement of the ram.

This guard device is very advantageous in that it can be applied to various presses without interfering with the nature of the press. It is also advantageous because the two arm engaging devices move from a central point

outwardly, and thus each one has a movement which is practically half of the width of the press. In guard devices heretofore used the arm sweeping device moved from one side of the press to the other, which is quite a long movement, and accordingly the arm sweeping device had to move relatively fast. Accordingly there was danger of the arm sweeping device striking the operator with a blow sufficient to incapacitate him. However, the movement of the arm sweeping devices of this guard is much less, and the movement accordingly can be slower so that the arms of the operator are more or less pushed out of the way instead of being given a sudden blow.

Moreover, the device can be easily applied and adjusted to presses of various sizes. For example, the rod 9 is adjustable in its socket 11 so as to position the track just at the right height for the bed plate, or die on the bed plate, and also the arm 6 is adjustable on the bracket 5 in order that the movements of the ram and guard devices can be properly coordinated.

In the modified form the sweeping device proper remains the same, consisting of the lazy-tong construction, but the operating means associated with the ram varies. In this form there is a bracket 20 secured to the ram, and the rod 9 is provided with a collar 21 fixed thereto as by means of a pin or the like 22, with a coil spring 23 interposed between the upper arm of the bracket and the collar. There is also interposed between the block 8 and block 12 a coil spring 24.

When the ram comes down, the arm 20 is pushed downwardly and the tendency is to compress spring 23. This moves the collar 8 down and spring 24 is compressed; the spring 23 is somewhat stronger than spring 24. When the ram lifts, the spring 24 raises the collar 8 and rod 9. It will be understood, of course, that the tongs are extended and collapsed in this operation. Preferably, when the ram is in raised position, that being the position shown in Fig. 7, the spring 23 is in substantially its normal position.

By this construction there is a cushioning action when the arm sweeping devices strike the arms of the operator, which comes about by reason of the fact that the ram pushes the arms of the operator outwardly under the spring action of spring 23.

I claim:

1. A guard for a punch press or the like, comprising a post fixed to the bed plate, a spring surrounding the post, a sliding block on the post above the spring, means fixed relative to the bed plate for supporting the spring, a lazy-tone construction having sweep arms having a connection fixed with relation to the bed plate and another connection with the sliding block, a plunger separate from a sliding block, means on the ram carrying the plunger, and a spring interposed between the said plunger-carrying means and plunger, said plunger engaging the block upon downward movement of the ram to compress the first mentioned spring and extend the lazy tong construction.

2. A guard for a punch press or the like, comprising a lazy tong construction, means connecting the lazy tong construction to the bed plate, a vertically reciprocable element connected with the lazy tong construction, spring abutment means fixed with relation to the bed plate, a spring disposed between said element and said spring abutment means which is adapted to extend the lazy tong construction, a plunger, means on the ram for carrying the plunger, said plunger being arranged to engage the said vertically reciprocable element, a spring interposed between said means on the ram and the said plunger so that downward movement of the plunger is cushioned by said spring, whereby the lazy tong construction is both extended and contracted in a spring cushioned manner, said second named spring being stronger than the first named spring.

In testimony whereof I affix my signature.

JOHN A. HINGER.